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MOTOR AGE

VOLUME XXII CHICAGO, OCTOBER 31, 1912 NUMBER 18

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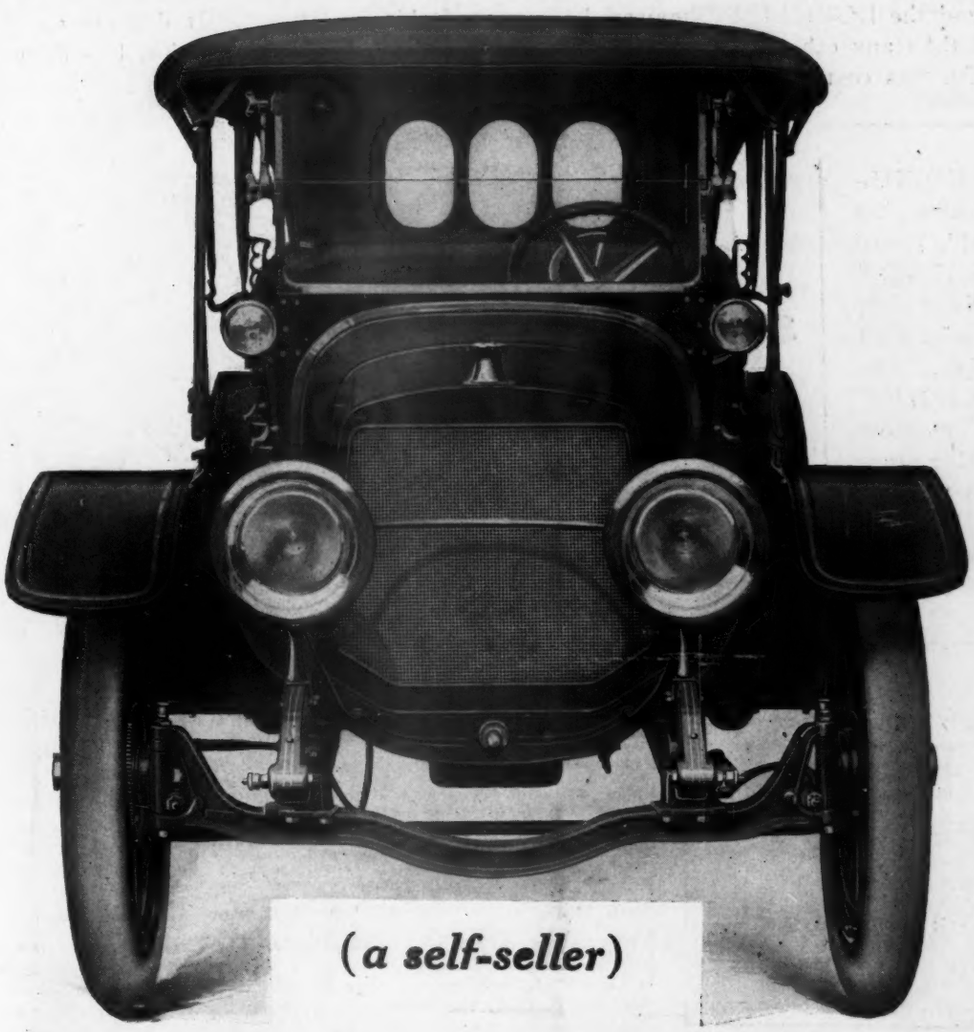

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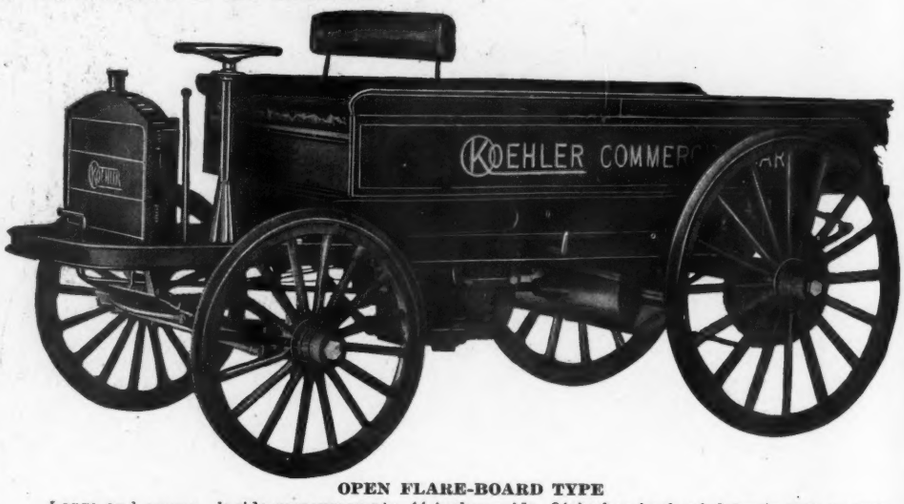

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MOTOR AGE

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Manufacturers of
Gasoline Motor Cars,
Trucks and Taxicabs.

VOL. XXII, No. 18 CHICAGO, OCTOBER, 31, 1912 $3.00 PER YEAR

MOTOR AGE

Three Perfect in Around-the-Lake Run

TOP—WICKE IN PERFECT SCORE MOLINE. MIDDLE—MONCKMEIER, STAVER, WINNER OF TOURING CAR CLASS. BOTTOM—SALISBURY, MOLINE, TIED WITH WICKE

Moline and Staver Again Divide Chicago Reliability Honors

Ten Out of Fifteen Cars Survive Adventurous Trip Around Inland Sea

By Darwin S. Hatch

CHICAGO, Ill., Oct. 28—For the third time in succession the Moline cars carried off highest honors in the annual reliability run of the Chicago Motor Club. The two entries, one piloted by J. A. Wicke and the other by Frank Salisbury, finished with perfect scores in the 1,170-mile run around Lake Michigan Sunday night, winning the team trophy and tying with each other for the individual trophy in the roadster and toy tonneau class for the Luce cup. The Staver entry, No. 4, driven by G. Monckmeier, won the touring car trophy, given by W. E. Stalnaker, and was the only other car to finish with a perfect score.

Of the fifteen starters which got away from Chicago on the morning of October 21, ten finished the 7-day run as contestants. The trip was 1,170 miles in length as laid out by the pathfinding car, with weather and road conditions at their worst during almost half the trip. Part of the run was through territory which was held to be impassable for motor cars and the fact that the cars were able to complete the trip, even though with heavy penalties, speaks well for their staunchness and the skill of their drivers.

Of the touring cars, the Velie, No. 1, driven by John Brolley, took second honors. This was the same car and the same

SCORES IN AROUND-THE-LAKE RELIABILITY RUN

TOURING CAR DIVISION

No. Car and driver	1st Day	2d Day	3d Day	4th Day	5th Day	6th Day	7th Day	Total
4—Staver, A. Monckmeier	0	0	0	0	0	0	0	0
1—Velie, J. Brolley	0	2	0	0	0	3	0	5
3—Staver, G. Knudson	0	8	0	0	0	0	0	8
2—Case, J. Hanson	0	0	0	3	38	9	0	50
5—Bergdoll, A. Monsen	0	161	9	0	52	64	12	298
6—Abbott-Detroit, A. M. Robbins	0	0	0	3	0	1397	0	1400
7—R. C. H., H. Parke	0	0	3	Withdrawn				
8—National, Gray	Withdrawn							

ROADSTER AND TONNEAU DIVISION

105—Moline, J. Wicke	0	0	0	0	0	0	0	0
106—Moline, Frank Salisbury	0	0	0	0	0	0	0	0
104—Bergdoll, T. Rooney	0	30	0	295	0	0	0	325
109—Stutz, C. Anderson	0	177	7	1186	57	1000	107	2534
101—Velie, M. H. Luce	0	Withdrawn						
102—Stutz, R. E. Maypole	0	Withdrawn						
110—R. C. H., M. Barney	0	Withdrawn						

KAVANAUGH, DRIVER OF MIDLAND STARTER'S CAR, AND HIS MASCOT

BROLLEY IN VELIE STOPS TO MAKE SURE OF ROAD

driver that carried the pathfinding crew when the route was laid out 6 weeks ago. Staver No 3, with E. Knudson as driver, finished third, the Case fourth, the Bergdoll No. 5 was fifth and A. M. Robbins' Abbott-Detroit No. 6 was sixth. In the roadster division, the Bergdoll, No. 104, with Tom Rooney driving, was second to the two Molines, while Anderson in the Stutz No. 109 was the only other driver in this division to finish. Anderson, although heavily penalized on account of broken springs, wins the amateur driver's trophy, as he was the only driver entered who was not affiliated with the trade.

Performance of Moline

Overshadowing all the other features of the run was the consistent performance of the Moline team, the staunchness of the two cars and the masterly way in which they were handled by their drivers. It was to the credit of Salisbury and Wicke as much as to the quality of their mounts that the Molines finished without penalty. Few drivers could have put any car in 7 days over the roads which encircle Lake Michigan without experiencing difficulties of some kind on the road. Other cars in the contest might have done as well had they been handled with the care shown by Salisbury and Wicke but not even the best driver could have put a mechanically weak vehicle over those roads, and at that speed without more or less penalty.

Monckmeier and his Staver are deserving of at least as much credit as the Moline drivers and their mounts for not only did the little Swede finish his car with a perfect score but, like the Molines, could have withstood a final technical examination, had there been one, with very little loss of credit, if any. Monckmeier's driving can be credited for his win over his teammate Knudson, for had the latter used the care that Monckmeier did in driving through the heavy mud of northern Wisconsin he would not have been forced to clean out his carbureter, and also would have annexed a perfect score.

The driving rain and heavy mud of the first 3 days of the run were responsible for most of the difficulties encountered by the cars. It rained almost incessantly for 2 days and the clay roads of northern Wisconsin and the northern peninsula of Michigan became perfect quagmires, necessitating a great deal of low-gear work, particularly on the hills, and causing carbureters to become choked up with the mud and water that splashed against them. The rain which had made the first 2 days run from Chicago to Escanaba a most disagreeable and hazardous trip, probably saved the day for the tourists when they entered the heavy sand in the north woods and pine barrens of the northern peninsula and all around the head of the lake. Sand hills which had been reported as almost impassable by the pathfinder were negotiated with little difficulty because the rain had packed it so that traction was afforded.

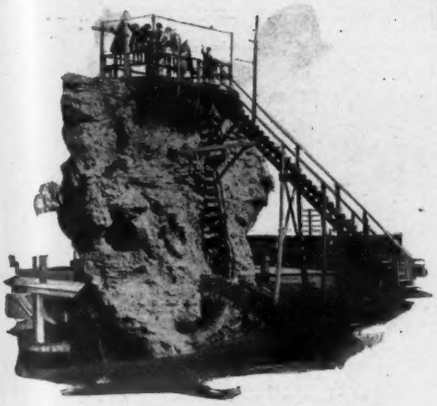
Through North Woods

The third day's run from Escanaba to Newberry, the northernmost point of the trip, is only 122 miles in length but was expected to be nearly the worst part of the route. The schedule was reduced to 13 miles an hour for the touring cars and 11 miles an hour for the roadster division. The road for the greater part of the way winds through the forests of mixed pine and hardwood and over great stretches of pine barrens and burnt-over woods, with stretches of corduroy roads, logs laid side by side through the swamp.

For about 10 miles north from Escanaba the road built by the state from Marinette to Escanaba is extended around the shore of Little Bay de Noc.

After reaching Rapid River the real wilderness was encountered. From here on the road consists of wagon trails winding in and out through the woods with branches extending in all directions and the forest encroaching on the roadway as if begrudging the space it took. These branching trails, however, merely take a labyrinth course among the trees and finally come back into one road further on. The roadbed was alternating patches of sand and muck in which the cars dragged their mud pans. In places there was the corduroy through the morass and in other places the road is made out of bark which provided good going.

Right in the middle of the forest when the tourists had begun to lose hope of there ever being better going a stretch of find hard macadam was found 5 miles in length, which began nowhere, passed through nothing but woods and ended no-



R. C. H. CREW FINDS ODD ROCK AT ST. IGNACE

where. At a little trading post called Thompson's, the first sight of Lake Michigan since leaving Milwaukee was obtained. From there on the road is good, and within about 4 miles of Manistique another stretch of the state-built macadam was picked up.

Taste Michigan Hospitality

At Manistique the tourists had the first taste of Michigan hospitality and began to realize the interest aroused in road building and motor cars in the north woods. The whole city turned out to welcome the tourists and they were tendered a luncheon at the Elk's Club. The macadam led the tourists northward from Manistique for a few miles and then abandoned them to the same sort of going as they encountered in the morning. Newberry, the night control, was reached shortly after dark. The road traversed for the day, though quite bad in spots showed that work was being done upon it towards improvement and in fact men and teams were working on the road when the tourists came through. The county engineer of Delta county, D. E. Brotherton, had gotten busy when the pathfinder went through, and in the 6 weeks intervening had done a great deal to improve the conditions. He had gotten out a route map and had it printed so that each of the drivers could be sure of striking the improved road which deviated somewhat from the route laid out by the pathfinder. In spite of the condition of the roads only three cars were penalized during the day.

Monsen had to refill his radiator three times because the jolting had started it to leaking, on account of the necessity of so much low-gear work. Parke's R. C. H. No. 7, stripped a gear in the gearset, in the heavy pulling and did not get into Newberry until long after the tourists had checked out the next day. It was over 12 hours late and consequently was automatically withdrawn. Parke and his passengers were forced to spend the night in the woods but, although out of the contest, pluckily stayed in the game and by driving night and day caught up with the tour at Petoskey, and finished with the others. In fact, the R. C. H. had the honor of acting as pacemaker as far as South Bend on the last day of the tour when the referee's car was temporarily out with a broken spring. Anderson's Stutz was forced to take on water twice the third day. At Newberry the tourists were treated to a chicken dinner, followed by a dance, at which the town fathers and county authorities told of their plans for making a motor boulevard through the woods and promised good roads all the year around within 3 years.

From Newberry to St. Ignace, the fourth day's run, is but 65.2 miles in length but promised to be the hardest of all, tthrough deep sand along the northern shores of the lake most of the way. However, less than 5 hours was consumed in making the trip. The only difficulty which was encountered by the cars as a whole was the trouble in following the trails through the sand plains. The whole party was lost completely for three-quarters of an hour.

This was the day that spoiled two perfect scores. The Case got 3 points for replacing a magneto wire which had jolted off over the corduroy roads. The Abbott-Detroit dropped out of the perfect score class when it became necessary to refill the radiator. All the radiators had been drained the night before to prevent possible freezing and the petcock in the Abbott had been left partially open. In the midst of a vast expanse brush and second growth timber the radiator went dry and Robbins' mechanic, Berry, scrambled 2½ miles through the dense underbrush and sand to the lake. After the radiator was filled the party proceeded 100 yards when a turn in the road brought them onto a bridge under which flowed a stream of clear water. This day was Rooney's hoodoo too, for in making a quick spurt through deep mud around one of the cars which was wallowing painfully through, Rooney ran into a tree and broke his steering knuckle. He walked

HANSON IN CASE, CLIMBING RAPID RIVER HILL IN WILDS OF NORTHERN MICHIGAN

TROUBLES THAT CAUSED PENALTIES IN CHICAGO RELIABILITY

Velie No. 1—Carbureter air intake screen stopped up with mud; second day driver cut hole in screen and finally removed it. Sixth day, slipping clutch; adjusted it twice.

Case No. 2—Fourth day, putting wire on magneto; fifth day, rear wheel off; sixth day, broken spring.

Staver No. 3—Second day, carbureter stopped up with mud and water.

Bergdoll No. 5—Steering knuckle broken in deep mud on second day; third day, took on water three times; fifth day, cleaning the mud out of and soldering radiator, adjusting push rod, late at control; sixth day, filling radiator with water five times, loose rear wheel, late at control; seventh day, taking on water 3 times, work on engine.

Abbott No. 6—Fourth day, replacing water lost through open drain pipe; sixth day, radiator ripped open by stick; worked on radiator; refilled radiator several times and finally put in a new one.

R. C. H. No. 7—Third day, took on water outside control; fourth day, withdrawn on account of stripped gears and transmission.

National No. 8—First day, loose rear wheel, over 12 hours late at control, automatically withdrawn.

Velie No. 101—Withdrawn second day, no penalties. Driver forced to return on account of business.

Stutz No. 102—Second day, stripped gears, withdrawn.

Bergdoll No. 104—Second day, stuck in mud hole, pulled out with engine driven winch carried on car; 30 minutes late at control; fourth day, broken steering knuckle caused by running into tree.

Stutz No. 109—Second day, slight battery trouble, work on fender bent by broken tire chain, and lateness on account of helping other contestants out of the mud; third day, taking in water and fixing fender; fourth day, 2 springs broken on account of having to run on high gear alone, other gears being stripped; fifth day, broken spring; sixth day, broken spring. Seventh day, broken springs and late.

R. C. H. No. 110—Frozen motor, withdrawn.

CHICAGO MOTORISTS WAITING TO SHIP ACROSS STRAITS AT ST. IGNACE

back 10 miles and secured a repair part, which was put in and by a wild night drive he caught the tourists the next day.

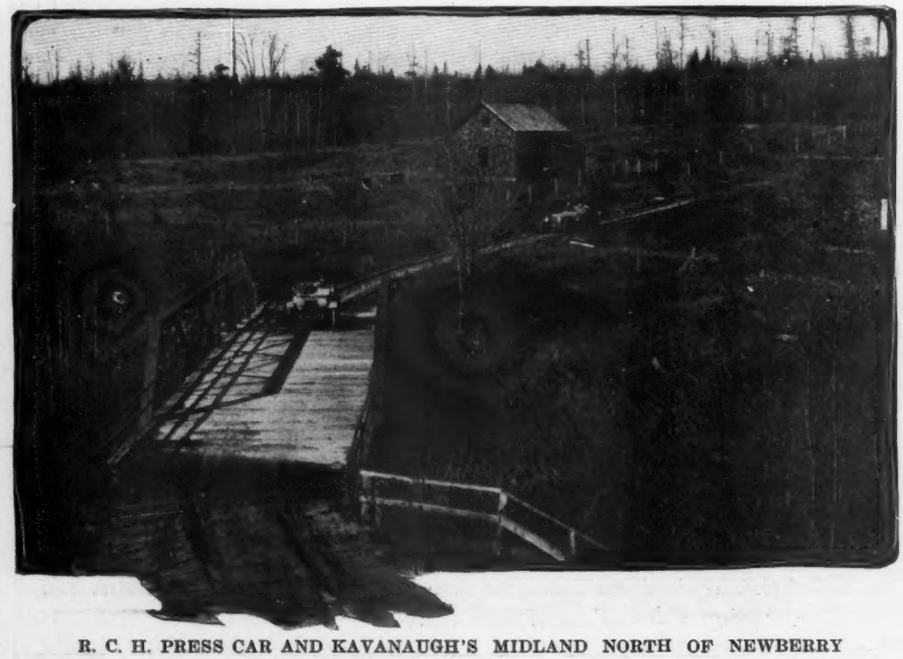
Fights Sand on High

Anderson, as well, had bad luck on the fourth day, as he stripped both low and intermediate gears and had to negotiate all the sand and mud and steep hills on high gear, with a gear ratio of about 2½ to 1. The wild driving necessitated by this caused him a succession of broken springs which cost him over 1,100 points in penalty, and required that he drive all night to get into control before his time limit of 12 hours had elapsed.

Upon arrival of the cars at St. Ignace at about noon they were loaded upon flat cars and these run upon the ferry which took them across the straits of Mackinac to Mackinaw City. The trip on the ferry takes about an hour and another hour is consumed in loading and unloading a car. With the sixteen cars entered in the tour the entire afternoon was spent in getting the cars loaded and unloaded at Mackinaw City. It costs $6.50 to ferry a car across the straits and 50 cents additional for each passenger. The railway authorities on the west side of the straits are very accommodating and load the cars themselves, but the local officers of the Michigan Central, at Mackinaw City, seemed unwilling to render any assistance whatever and the tourists had to unload the cars without assistance. All the gasoline had to be drained from the fuel tanks before they were shipped across.

The night was spent at Mackinaw City and the start for Traverse City was made next morning at 9 o'clock. Once on the east side of the lake the tourists felt the worst of the trip was over and were inclined to take things easy. The late start enabled several of the cars which had been delayed to rejoin the tour and Rooney, Anderson and Park's R. C. H. took advantage of the opportunity.

It was at Mackinaw that the tourists were overtaken by the Staver Dictator, a new 1913 Staver model, that had not been completed in time for the start from Chicago. With three men it left Chicago Tuesday night and caught up with the tourists at Mackinaw, making the 4 days drive in 2 days. The car was pushed through night and day with one driver sleeping while the other piloted the machine and the third man read the route directions to the driver. The car was stopped only long enough for the men to get supplies of fuel and oil and food, except for 3 hours, during which the men slept on top of the warm boilers of a lumber mill in the north woods.



R. C. H. PRESS CAR AND KAVANAUGH'S MIDLAND NORTH OF NEWBERRY

Fifth Day of Tour

From Mackinaw City to Traverse City was scheduled for the fifth day's trip. The distance was only 109 miles and was the easiest jaunt of the entire trip. The route lies through a beautiful rolling country, over fair roads all the way and fine macadam around Petoskey, the noon control. In the afternoon the route followed the lake closely and ran through a string of summer resorts almost the entire distance to Traverse City. The roads are very good and motor cars abundant. In spite of the easy trip, however, three cars accumulated demerits. The passengers in Hanson's Case had a very narrow escape from serious injury when a rear wheel loosened up and started to come off. By dexterous driving Hanson succeeded in keeping the car right side up and getting it stopped. The repair cost the Case 38 points. Monsen accumulated 52 points more for the Bergdoll as he found a leaky radiator and had to clean the mud out of it and solder it up. He was having slight engine trouble as well, and adjustment of the pushrods also helped in his total. Stutz got 57 points penalty through broken springs.

Road Work Makes Hard Day

From Traverse City to Grand Rapids, a distance of 207.3 miles was the sixth trick, with lunch at Ludington. The route was through Manistee, Ludington, Pentwater, Hart and Muskegon. The roads were worse on this day's run than was expected

CONTESTANTS IN CHICAGO RELIABILITY CHECKING IN AT MACKINAW CITY

as there was a good deal of work being done on the roads and they were closed for miles in several places which necessitated detours through heavy sand.

Grind Tells on Cars

The contesting cars had begun to show the wear and tear they had gone through and heavy penalties were acquired by several of them. Brolley's Velie stripped its first-speed gear on a hill when stalled by a farm wagon in front of it and the strain of starting on second started the clutch to slipping so it had to be adjusted. The No. 5 Bergdoll had a leaky radiator and was continually taking on water. One rear wheel loosened up as well and Monson was assessed 54 points for the day. Robbin's Abott-Detroit received the record penalty for any one day, when the car ran into a protruding branch which went through the radiator. Two attempts were made to solder it and the car came in very late at Grand Rapids where it was decided to replace the radiator. Anderson got an additional 1,000 points for his regular trouble of broken springs.

The last lap of the tour around the lake was from Grand Rapids to Chicago. Good gravel and fine macadam was the rule and all cars were running far ahead of the schedule speed of 20 miles an hour. This was the longest distance of any day's run on the tour, 217.8 miles. The route lay through Kalamazoo, Niles and South Bend. At Michigan City the home-coming tourists were met by a delegation from the Chicago Motor Club which escorted them into the city. With two exceptions, all the contesting cars made the last day's run without penalty. Monsen had to do a little work on the engine of the Bergdoll, and found it necessary to refill the radiator 3 times, which cost him 12 points. Anderson was delayed by the same old trouble of broken springs and did not get in until very late.

National Catches Up

When Ludington was reached on the Saturday run, the tourists were caught by the National car which had started as No. 8. This car was the entry of the Chicago Spring Wheel Co. and is equipped with solid tires and the spring wheels made by that concern. Also, although most of the contestants had no top at all, this car carried a fully enclosed limousine body. There were three drivers, including R. B. Gray, and the car had been on the road night and day until it caught the tour. The original cause of its delay the first day which put it more than 12 hours behind the tour was the loosening of a wheel.

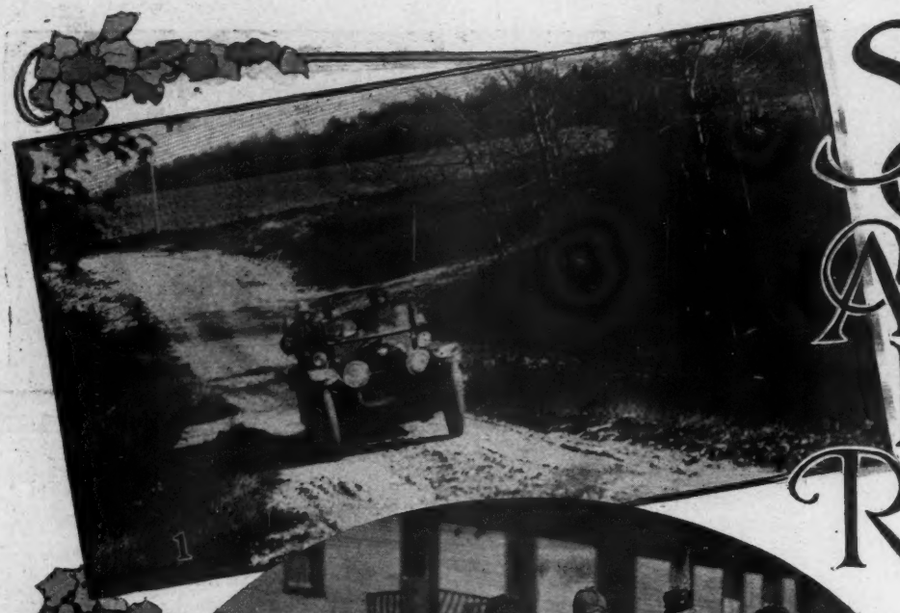
Official Cars Perform Well

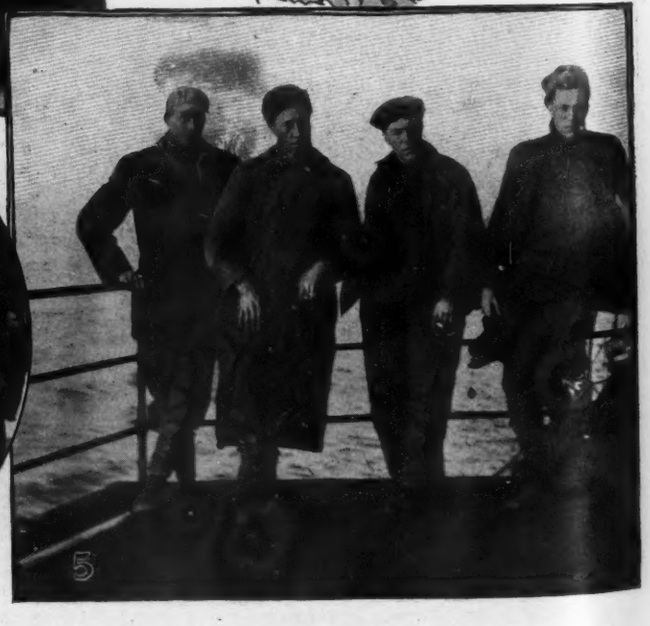
Not only did the contesting cars have their troubles, but the official cars as well were laid up at times. The official cars are subjected to harder service than are the contesting ones, but all succeeded in coming through in fairly good order. The pilot car probably receives the hardest service of any one of the cars connected with a tour of this kind. The pilot must carry the bags of confetti which is strewn along the way so the tourists will know the right road to take and must nose out detours in case the road is closed, must stop whenever a dangerous or exceptionally rough spot is encountered and mark it so that those who come behind will have an opportunity to slow down or avoid it. At the same time, the pilot car must go fast enough so that with all of these stops it does not delay the tour. It must be on the job all the time.

The six-cylinder Kisselkar driven by Harry Branstetter carried the pilot practically all the way although the rough service resulted in several broken springs. The Staver roadster which carried Referee Charles P. Root and acted as pacemaker was on the job nearly all the time with Vaught at the wheel. Broken springs made trouble once or twice. The Midland, driven by M. Kavanaugh, its owner, was the starter's car and carried Starter L. A. Watts. Its chief duties seemed to be pulling stranded cars out of mudholes along the way. It was on the job all the time, and gave no trouble. The press car was an R. C. H. and made a fine showing, comparing favorably with some of the more expensive machines in the long contest.

CONTESTANTS IN CHICAGO RELIABILITY CHECKING IN AT MACKINAW CITY

Scenes on Chicago's Around-Lake Michigan Reliability





1—A. M. Robbins in Abbott-Detroit No. 6 on road near Charlevoix after negotiating woods of northern Michigan

2—Monsen in the Bergdoll touring car, who had an exciting adventure the second day of the tour

3—Knudson's Staver and the Case find good roads near Charlevoix

4—R. C. H. press car loaded with school children at St. Ignace

5—Moline's crew—Wicke, Salisbury and mechanics.

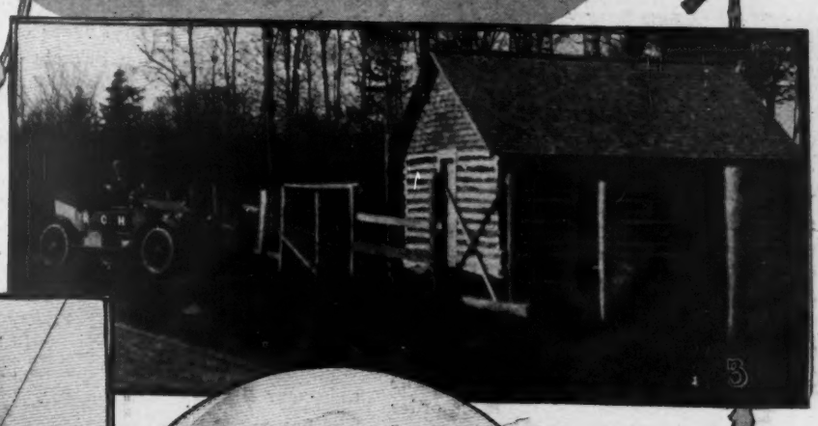
1—Anderson, in Stutz, helps his team mate, Maypole, near Lapeer, Mich.

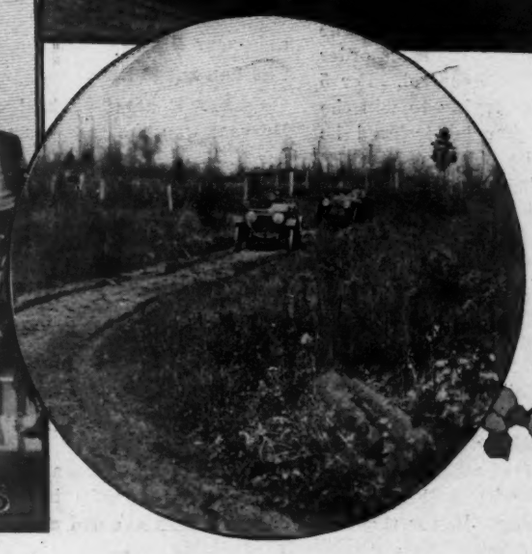
2—Anderson, Stutz, the only owner-driver in the reliability

3—Typical log cabin found in woods of northern Michigan

4—Taylor in R. C. H. and Starter Watts' Midland on road from Newberry to St. Ignace

5—Tourists on ferry crossing Straits from St. Ignace to Mackinaw City.





Franklin and Stevens Win Road Races

Hamlin, After Many Triale, at Last Succeeds in Capturing Los Angeles-Phoenix Desert Contest—Residents sf San Diego Run Rival Event, with Finish at Same Place—Many Fall by the Wayside

PHOENIX, Ariz., Oct. 29—Special telegram—The last two road races of the year have been run and won, the Los Angeles-Phoenix event, 511 miles, being won by Ralph Hamlin in a six-cylinder Franklin, at an average of 28.2 miles per hour, while the San Diego-Phoenix event, 400 miles, was captured by D. C. Campbell at 23.7 miles per hour. The results were as follows:

LOS ANGELES-PHOENIX

Pos.	Car and driver	Time
1	Franklin, Hamlin	18:10:22
2	Cadillac, C. Soules	18:54:05
3	National, Fuller	19:45:06
4	Cadillac, Bramlette	23:18:27
5	Cadillac, McKee	23:46:31

Also started: American, Pipher; American, Bunnell; Simplex, Faulkner; Hupmobile, Jones; Buick, L. Nikrent; Mercedes, Bigelow; Schacht, Bell.

SAN DIEGO-PHOENIX

Pos.	Car and driver	Time
1	Stevens-Duryea, Campbell	16:49:20
2	National, Houston	18:55:00
3	Apperson, Ferguson	19:07:29
4	Mitchell, Greer	21:16:00
5	Kisselkar, Coop	22:47:52
6	Stutz, Washburn	38:50:00
7	Simplex, Rice	58:53:00

Also started: Buick, Campbell; Mercedes, Johnson; Pope-Hartford, Griffith; Franklin, Carlson; Studebaker, Wood; Columbia, Smith; Knox, De Lovelace; Pope-Toledo, Ballert; Tincher, Lees; Winton, Carlson; Premier, Fernando; Michigan, Gilstrap; Buick, Biggs; Kisselkar, Chenowith.

Details of the Races

After battling a way across oceans of sand and mud, through raging torrents and over mesas where the roads had been obliterated by one of the most severe storms in the history of the southwest. Hamlin yesterday realized life's greatest ambition when he drove his Franklin six-cylinder to victory in the fifth Los Angeles-Phoenix road race. Five of the twelve cars entered in the race finished. All three of the Cadillacs entered were among the five cars to finish.

Hamlin took the lead just beyond Brawley and held it to the end. His time into Yuma was 10 hours and 32 minutes. The cars finished at Phoenix in the same order they arrived at the Yuma control. For 5 years Hamlin has been trying to win the Phoenix race. Each time he declared he would keep at it till he did win.

The start was made Saturday night in bitter cold. When the cars pulled away from Los Angeles the drivers and mechanicians were wrapped in blankets. A storm had been raging for hours on the desert, and most of the course was muddy but not as bad in California as in Arizona, where the storm was fiercer.

This side of the Colorado, gullies had been washed across roads, which were in places wiped out entirely. Hassayampa river, 50 miles west of Phoenix, and Agua Fria, 16 miles out, were both running bankfull Sunday morning. It was thought an extra control would have to be established at Hassayampa and have the cars finish Tuesday, but Hassayampa went down and mules towed the cars across Agua Fria.

Hamlin changed two tires this side of Yuma, but had no other trouble. Soules had little trouble. The National had only minor difficulties due to the condition of the course. McKee got lost and went 8 miles out of his way. He also changed several tires.

There was only one accident in the race—at Vineyard Curve, near Ontario, Cal., where the Buick overturned. Louis Nikrent, the driver, had three ribs broken. Fred Nikrent, mechanician, also was badly injured. Both will recover.

In avoiding a collision with the Buick, the Mercedes broke a radius rod. The rod was temporarily repaired, but broke several times after that. The car lost about 14 hours from this cause. The Schacht broke a rear axle near Glamis, and lost 14 hours. It arrived in Yuma only 1 hour before the other cars went out of the control. Driver Guy Ball continued, though he knew he was out of the money. He acted as a good Samaritan for machines in the Los Angeles and San Diego races. Otherwise several never would have reached Phoenix. The Schacht and Mercedes arrived late Monday night.

The Simplex had trouble with chains, and was stuck in the mud several times. The driver spent Monday night on the desert 100 miles west of Phoenix. The American, driven by Bunnell, skidded into a viaduct within the city limits of Los Angeles and dished a wheel, which caused the car to quit this side of Brawley. The other American, driven by Pipher, dropped out in the same district supposedly because of axle trouble. The Hupmobile broke an axle near Brawley and was out.

The San Diego Race

Campbell, at the wheel of a Stevens-Duryea, won the race from San Diego in 16:49:20. Nearly all the San Diego cars had some trouble. The course of the two races were different in California, but all cars checked into Yuma and from there on the route was the same. Many San Diego cars never reached Yuma. The Columbia cracked a cylinder and did not get to the control. Near Palomas, on the Arizona side, the carbureter on the San Diego National caught fire and burned out all connections. A delay of 2 hours resulted. The National picked up three nails and changed three tires near Dome. The Apperson got two nails in the same place. The Apperson avoided a rear end collision with the Stevens-Duryea at the expense of a broken radiator. The Stevens was halted and the driver of Apperson, close behind, had to go down into an arroyo or over the bank. He went into the arroyo. He smashed a radiator, but soon repaired the damage and finished fourth. The Stutz had much engine trouble.

The Winton was stuck in an arroyo near Arlington and has not arrived. The Pope-Hartford broke a frame near Dome and the crew repaired the damage with fence posts and baling wire borrowed while the farmer was not looking. With a fence post on each side and wire swathed around the car, the Pope was a strange sight when it reached Phoenix today.

Five minutes after the San Diego racers left, Mayor James E. Wadham, of that city, and Percy Benbough started in a National and an Abbot-Detroit to make the most rapid run possible to Phoenix. They came straight through without going into the control. Wadham won in 19 hours 35 minutes. The Abbott-Detroit, stuck twice in the mud, finished an hour and a half later.

Descriptions of Courses

The course from Los Angeles is 511 miles in length, while the road from San Diego is just a little more than 400 miles.

For 3 years the race from Los Angeles was across the desert by Mecca, across the Colorado at Ehrenberg, and thence on over the Arizona mesas to Phoenix. Last year it was changed to pass through San Diego and Yuma. This year still another change was made and San Diego was left off the course. On the California side the principal towns through which the route passes are Alhambra, El Monte, Puente, Lemon, Walnut, Spadra, Pomona, Ontario, Bloomington, Colton, Beaumont, Banning, Palm Springs, Mecca, Brawley, Mammoth, Glamis and Ogleby. The Yuma control is the first stop on the Arizona side of the Colorado. It was from this place that the cars in both races started Monday, passing through Dome City, Middle Wells, Palomas, Agua Caliente, Arlington, Buckeye and on to the fair grounds, which are situated on the outskirts of Phoenix.

It is at Yuma that the two race routes converge. The San Diegans raced across the southern California desert by way of El Centro and Holtville.

There is little to choose between the two courses. Up to 2 weeks ago 45 miles of the desert between Holtville and Yuma had never been crossed by a motor car. The first to cross that waste was a Premier, driven by J. L. Fernando, with M. J. Farlow as mechanician. Fernando and Farlow were lost a night and a day on the

desert and had a terrible experience. They encountered sand so deep that even after they had deflated their tires the only way they could progress was to leap out and push from behind, letting the car steer itself.

Before the day of the race the routes were placarded thoroughly. Between Holtville and Yuma there was a flag every 2½ miles and 5 gallons of water.

AVERILL GIVES UP YORK JOB

New York, Oct. 29—H. R. Averill, who has been connected with the Pullman Motor Car Co., of York, Pa., for 6 years as general sales manager, has resigned, the resignation taking effect November 1. Mr. Averill will take a vacation before considering any of the offers he has on hand.

GRAND RAPIDS PROMOTES RUN

Grand Rapids, Mich., Oct. 28—After a 400-mile trip through western Michigan the entrants into the reliability run given under the auspices of the Grand Rapids Herald and the Grand Rapids Automobile Club, pulled into Grand Rapids, bedraggled and mudstained, but with two of the drivers happy in the fact that they had attained perfect scores. The final results showed points penalized as follows:

No.	Car	Driver	Total Penalties
1	Cutting,	Riekse	234
2	Reo,	Vandecar	0
3	Ford,	Vallade	88
7	Cadillac,	Eckburg	0
8	Overland,	Oswald	868
9	Marmon,	Kramer	1
10	Oakland,	Austin	0

The first day's run was 114 miles to Ludington. The second day 98.5 miles were covered to Traverse City. The third day was from Traverse City to Cadillac and the fourth day brought the tourists home.

TO TAKE OVER KELLY PLANT

Columbus, O., Oct. 28—The stockholders of the Kelly-Springfield Motor Truck Co., Springfield, O., recently incorporated with a capital of $3,500,000 met in Columbus last week and perfected the organization. The new company will take over the plant and business of the Kelly Motor Truck Co. and extensive enlargements and additions have been planned. The new capitalization will be divided $1,000,000 of common and $1,500,000 of 8 per cent cumulative preferred stock; $510,000 of the common stock will be issued at once and $800,000 of the preferred stock will be issued at once. Emerson McMillen & Co., of New York is financing the concern. Of the stock to be issued immediately $19,875 of the common and a like amount of the preferred will be used to acquire the plant from the old corporation.

NEW RUBBER COMPANY RUMORED

Detroit, Mich., Oct. 28—A new rubber company, with a capital stock close to a million, is reported to be planned by interests in this city and in Cleveland. It is proposed to manufacture tires which will be non-puncturable and blow-out proof, and which are the patented invention of Arthur Elliott, of Cleveland. Three patents have been issued to Mr. Elliott covering a lap-lock base, straight side walls and steel band inner liner for the tire shoe. It is understood that several rubber men are interested in the venture which is contemplating the building of a factory either in this city or in Cleveland. Negotiations are being carried on here by Charles Ritter, while the Cleveland representatives are the Standard Sales Co.

HUB'S ELECTRIC SHOW OVER

Boston, Mass., Oct. 26—Boston's big electric show closed tonight after 4 weeks of remarkable success during which it is estimated that there were 500,000 people in attendance. And of all the exhibitors who were pleased at the amount of business done none were more so than the men who handle the electric vehicles in Boston. Those dealers who had commercial vehicles alone found that there were innumerable places in New England where business men could utilize trucks. This was brought home to them through the cooperation of the men at the heads of the various electric light plants in the cities and towns of the New England states.

OHIO CREDITORS PROTEST

Cincinnati, O., Oct. 28—Proceeding to place the Ohio Motor Car Co. of this city in bankruptcy were entered yesterday by creditors, who charge the company with consenting to let its business pass into the hands of a receiver, Edward G. Schulz, appointed by the common pleas court a month ago. It is alleged the receivership was brought about by the Diamond Rubber Co. for the purpose of protecting its own claim of $6,000 and was meant to give that concern an advantage over other creditors.

Another accusation is that the Ohio company on May 1 last, being then insolvent, gave the Miami Valley National Bank of Hamilton a bill of sale and chattel mortgage on eleven cars to secure a debt of $11,552 to the bank and later on gave the bank possession of two more cars.

The creditors taking action and demanding that the company shall be declared bankrupt are the Eiseman Magneto Co., with a claim of $1,980; the Bosch Magneto Co., with a claim of $495, and W. D. Byron & Sons, with a claim of $825.

RULING IN SPARK PLUG SUIT

New York, Oct. 30—Special telegram—Judge Hand, of United States district court, has rendered an opinion in the suit instituted by A. R. Mosler & Co., against the Auto Supply Co., for alleged infringement of the Canfield patent, 612,701, covering a type of spark plug which has a recess around the electrode. The opinion sustains the patent within certain narrow limitations but holds that the defendant company is not guilty of infringement.

The reason adopted by the court is based upon the fact that Canfield, a pioneer in the industry, really devised a patentable element when he produced spark plugs of the kind covered by the terms of the patent. Canfield, however, disposed of his patent in 1902 and later it was assigned to the Torbenson company and afterward to the Association Patents Co., subsidiary of the old A. L. A. M. There it remained from 1906 to 1909, when Mosler purchased it.

The ruling that the patent was not infringed is based upon the fact that under the construction of the court Mosler himself manufactured a type of spark plug that came within the claims of the patent long before he acquired any interests in the patent.

GOVERNMENT OPENS TRUCK BIDS

Washington, D. C., Oct. 29—Special telegram — The general supply commission of the federal government today opened bids for furnishing various government departments with motor trucks. While only six trucks will be purchased, it is intended under this opening to use the figures submitted as a basis for further purchases. The amounts of the various bids will not be made public for several days.

Propositions were received from Chase Motor Truck Co., Syracuse; Stewart Motor Truck Corporation, Buffalo; Hupp Motor Car Co., Detroit; Commercial Truck Co. of America, Philadelphia; A. O. Smith Co., Milwaukee; International Motor Co., New York; W. H. McIntyre Co., Auburn, Ind.; General Vehicle Co., Long Island City; Federal Motor Truck Co., Detroit; Baker Motor Vehicle Co., Cleveland; Kissel Motor Car Co., Hartford, Wis.; Congressional Garage Co., Washington; Peerless Motor Transfer Co., Washington; Kentucky Wagon Mfg. Co., Louisville; White Co., Cleveland.

HARTFORD DENIED INJUNCTION

New York, Oct. 29—The United States district court at Trenton, N. J., has denied the motion recently made by the Hartford Suspension Co. for a temporary injunction against the Connecticut Shock Absorber Co. in the suit of the Hartford company against Ellis, an accessory dealer of Newark, N. J., charging infringement of the Traffault patents. The court, however, imposed a bond of $20,000 upon the Connecticut company, despite the fact that the order dismissed the motion for an injunction. The Connecticut company asked leave to intervene and defend the action and the court granted the motion.

The procedure with regard to the reason for asking a bond where the motion for injunction was nominally denied attracted a large amount of interest not only in the industry but among the legal fraternity as well.

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"See America First"

THE American tourist of today is not aware of the scenic fascinations of the great mountain sections of the west; he is not aware of the exhilaration that comes from weeks spent in the foothills of the Rockies, as well as crossing the main ranges through the various passes; he is ignorant of the boundless wealth of the great plateau land between the Rockies and the coast ranges, and he has not grasped the stimulating benefits that come from weeks of out-of-door life in this the great tourists' playground of the American continent.

COLORADO has within her borders more of mountain scenery than all of Europe can boast of. The motorist refrains from touring in Colorado because he considers the roads impossible and is not familiar with the hotel accommodations. The tourist who has spent weeks and traveled from 1,500 to 2,000 miles through the scenic centers of Colorado is amazed at finding the roads through nearly all of the mountain passes better than the roads of the Adirondacks or the White mountains. This is true. The state of Colorado has, through its convict labor system, accomplished wonders in road construction, building roads that are being as scientifically constructed as many of the famed highways through Switzerland; in fact, Colorado is aiming at equaling, if not surpassing, Switzerland by engineering road plans whereby it will be possible to travel through the heart of the Rockies and not encounter grades of over 6 per cent.

TODAY it is possible for a tourist driving himself, and with a party of four, to spend 3 weeks in the heart of the Rockies; to travel during this period 1,500 miles, and to get more vistas of mountain scenery, fathomless canyons and other formations consequent upon mountain ranges than he could obtain in a similar period in the Alpine sections of Europe.

THE trouble with the American tourist today is that he does not know his own country; he does not know the mystic beauties it affords the motorist who seeks the far-away fields of western grandeur. Unfortunately, those states that hold in their lap the unexcelled grandeurs of the continent have not advertised these beauties as they should have. They have been content to let American tourists spend their tens of millions annually with the hotels and inns of Europe. Today they are not awakened to the possibilities of turning the tide of touring from our big cities westward.

THE roads are there, the scenery is there, the hotels, to an extent, are there; the directions for the tourist to follow are there, the signboards are more prolific than in New England; but, the tourists are wanting. It remains for the citizens of Colorado, for the citizens of Arizona, for the citizens of Montana, for the citizens of Utah and for the citizens of California and the coast states to unite and proclaim to the American tourist what they have to offer. Without this it is unnatural to expect that the tide of touring will turn to the west as it should.

SEE America First is the watchword that all of these western states should keep constantly before them. Their messages must be carried to the cities of the central west and of the Allegheny slopes. One announcement will not serve to change the courst of travel; two will not suffice; a hundred may fail to accomplish the desired results. One thing is certain, namely, that if the great army of American tourists was aware of the phenomenal scenery of the sections referred to, and aware of the relatively good condition of the roads today, and was aware of the reasonable hotel accommodations afforded that there would be millions spent in the west central and mountain states next year which will, unless something is done, be spent in the various countries in Europe.

THE entire country is not aware of the phenomenal strides that have been made in road-building in the mountain sections of Colorado within the last few years. This road enterprise has not been confined solely to highways from city to city, selecting the shortest route; rather scenic roads have been engineered and built especially for the mountain panoramas which they afford. Through the deepest canyons the motorists' narrow stone road is now an accompaniment of the ever-present mountain river or creek, and the pioneering railroad track. Practically all of the more important passes have improved roadways. It is true that these are narrow, but they are adequate. The owner-motorist, who is accustomed to driving his car over the varied roads of the country, will not have any difficulty in a 2-weeks' mountain trip. At times he will skirt apparently fathomless canyons, but there is no immediate danger. At other times he will be far above the timber line, but the roadway is as safe as through the corn fields of Illinois. In a 2-weeks' trip, if he has his car in rational condition, it will not be necessary to have to be towed in a single instance. He will find comfortable hotels and inns within reach nearly every day. He will have no difficulty in purchasing gasoline. He will have no difficulty following routes from place to place; in fact, he will find touring in many of the most beautiful sections of the Rocky mountains as easy as in the central states and some parts of New England.

AMERICA is renowned for her Grand canyon of the Colorado, for her Yellowstone park, for her regions of the cliff dwellers, for her Yosemite and for her countless ranges of mountains, and yet these go begging while the coffers of Europe are annually filled. The remedy lies with the citizens of those states embracing the Rocky mountains and westward. They should co-operate. They should begin at once. They should aim at diverting a fraction of the 1913 tourists' traffic. They should honestly advertise what they have by way of roads, by way of hotels, by way of route books, by way of signboards, by way of garages and get a fraction of the share of American tourists' traffic that they deserve.

BUT you can go further: The wealth of Europe is looking for new touring fields. They have conquered the Alps and their two-score passes; they have made their annual tours through the Tyrols; they have traveled through Scandinavia; they have encroached as far as possible on the boundless Sahara, and today they would come to America if they thought they had rational roads, rational hotels and rational road directions. There is no reason why, with the progress in roads that is being made through Colorado and other states, that this advertisement, See America First, cannot cross the Atlantic, and instead of American millions finding their way into European countries, there will be European money coming to maintain American roads, American hotels and giving to other American industries that percentage of traveling expenses which is sure to follow.

Badgers Proud of Year's Work on Roads

MILWAUKEE, Wis., Oct. 28—A review of the highway situation in Wisconsin at this time presents a most satisfactory state of affairs. During the past year approximately $950,000 has been expended in permanent highway improvement, and the estimates for next year, based on the demands of the counties for state aid, are in excess of $1,750,000. The report of A. R. Hirst, chief engineer of the Wisconsin state highway commission, shows that the counties are asking $811,150 from the state for permanent work in 1913, as compared with $453,417 demanded for 1912 work. Of course, not all of these demands can be met, as there is provided by law only $350,000 annually, to be distributed pro rata on the basis of the petitions. Only three counties have failed to file petitions for state aid, as against twelve last year.

Engineer Hirst's report shows that about 35 miles of concrete road were constructed during the closing season. The average cost is 90 cents per square yard. Milwaukee county built 12 miles this year, and plans 40 miles in 1913.

The growth of highway improvement in the newer and poorer counties is a feature of the situation. Florence county, least wealthy county of the state, built 5 miles of the best road in Wisconsin at an expense of $2,500 per mile. The road is constructed of iron ore rock or tailings from the iron mines, 16 feet wide. The road will wear better than iron, says Mr. Hirst.

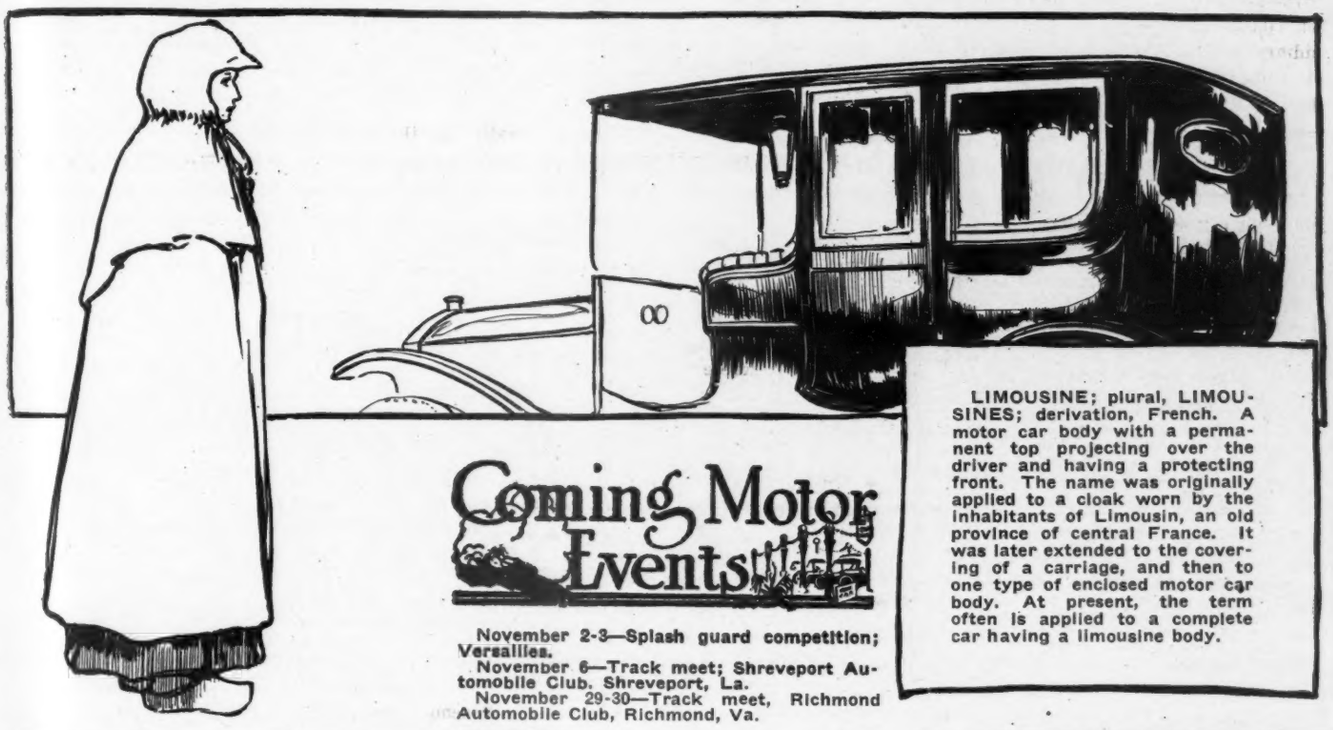
A permanent road of high class was this year built from Sturgeon Bay to the new state park in Door county, a distance of 21 miles. Door county abounds in limestone and for $1,600 per mile the county has built one of the finest macadam highways in Wisconsin, with but two short gaps in the 21-mile stretch connecting the rest of the state with the new state park.

What can be done by private enterprise is shown by the report of the Oconomowoc-Milwaukee Road Association, the Chicago-Milwaukee Good Roads Association and the Wisconsin Lake-to-River Road Association. The Oconomowoc-Milwaukee body expended $4,457.08 in keeping Blue Mound road, from Milwaukee to the heart of the Waukesha county lake country, in good repair. This amount was raised by popular subscription.

The permanent improvement plan of Milwaukee county is elaborate and will silence critics who declare that Milwaukee county's highways are not only the worst in America, but there seems to be no inclination to improve them. The 12 miles of concrete road built this year will be increased to 52 miles by the end of 1913. A continuous strip of permanent highway will result from the plan to concrete Grand avenue from the Thirty-fifth street city limits to the east end of the new Grand avenue viaduct, the west end continuing in a 120-foot boulevard for a distance of 4,000 feet to Hawley road, which will be concreted from Grand avenue boulevard to Blue Mound road, ¼ mile, and Blue Mound road from Hawley road to the county line, 4¼ miles.

Wisconsin Has Spent $950,000 on Highways so Far in 1912

Antecedents of Words Now Part of Motor Phraseology



LIMOUSINE; plural, LIMOUSINES; derivation, French. A motor car body with a permanent top projecting over the driver and having a protecting front. The name was originally applied to a cloak worn by the inhabitants of Limousin, an old province of central France. It was later extended to the covering of a carriage, and then to one type of enclosed motor car body. At present, the term often is applied to a complete car having a limousine body.

Coming Motor Events

November 2-3—Splash guard competition; Versailles.
November 6—Track meet; Shreveport Automobile Club, Shreveport, La.
November 29-30—Track meet, Richmond Automobile Club, Richmond, Va.

SHOWS.

November 8-16—Olympic show; overflow
November 16-23—Show at Atlanta, Ga.
November 13-15—N. A. A. M. meeting, Detroit.
December 7-22—Paris salon.
January 6-11, 1913—Cleveland show.
January 4-11—Montreal show.
January 11-18—New York pleasure car show; Automobile Board of Trade; Madison Square Garden and Grand Central Palace.
January 11-22—Brussels, Belgium, show, Centenary Palace.
January 20-25—New York truck show; Automobile Board of Trade; Grand Central Palace and Madison Square Garden.
January 20-25—Philadelphia show.
January 25-February 1—Montreal, Canada, show.
January 27-February 1—Detroit show.
February 1-March 1—Pleasure car and truck show, Cincinnati, O.
February 1-8—Chicago show.
February 10-15—Chicago Truck show.
February 10-15—Minneapolis show.
February 11-15—Ottawa, N. Y., show.
February 15-22—Newark, N. J. Show
February 16-23—Richmond, Va., show.
February 17-22—Kansas City show.
February 24-March 1—Show, Cincinnati, O.
February 24-March 1—Show at Omaha, Neb.
March 3-8—Pittsburgh show.
March 8-15—Boston pleasure car show.
March 17-22—Buffalo show.
March 19-29—Boston truck show.
March 24-29—Indianapolis show.

W. E. Flanders May Join United Motors

Negotiations Reported to Be Under Way to Bring Detroit Concern and Its President Into Big Holding Company—Vice-President Smith Admits Merger Is Actual Fact—Details of the Deal Not Ready for Publication

DETROIT, Mich., Oct. 30—Special telegram—Rumors which were current in this city during the past week to the effect that Walter E. Flanders had assumed the presidency and general managership of the recently reorganized United States Motors Co., and that the Flanders Motor Co. has been merged with these interests, have assumed tangible form, negotiations to that effect being now under way. The Flanders interests, with a capitalization of nearly $4,000,000, will become a valuable subsidiary of the United States Motors, and it is understood that the latter will assume all the debts and obligations of the Flanders organization.

It is understood that the greater part of the Flanders staff of engineers, advertising men and salesmen will be taken into the combine and that the United States Motors Co. will have available not only the 6,000 Flanders cars built and contracted for, but also the factory facilities of the Flanders concern.

Vice-President Paul Smith, of the Flanders company, stated today that while the merger is an actual fact, no details of the negotiations or the agreement can yet be given out, as nothing definite and final has been done. Mr. Flanders is in the south.

The Flanders Mfg. Co., Pontiac, Mich., is not affected by the merger.

In all probability there will be some definite announcement made in the near future, but it is thought the statement will come out of New York.

HALLADAY PLANS UNDECIDED

Chicago, Oct. 28—No definite policy as to the future has been outlined as yet by the Streator Motor Cor Co., of Streator, Ill., maker of the Halladay, which last week was placed in charge of a receiver, the Central Trust Co. The plant is being operated by the receiver and it is expected that by the end of the week the officers of the company will be in a position to issue a statement as to their plans.

CONSOLIDATED STATEMENT OF ASSETS AND LIABILITIES OF THE UNITED STATES MOTOR CO. UP TO SEPTEMBER

REAL ESTATE, BUILDINGS AND EQUIPMENT—as per the books	$7,858,266.23		
Deduction — Depreciation as per the books	1,473,493.24		
	$6,384,772.99		
Value as a going concern—Appraised by Gunn, Richards & Co.	$4,999,836.31		
Auction value — Appraised by Gunn, Richards & Co.	$2,602,000.00		
REAL ESTATE INVESTMENTS—			
Columbus Circle Realty Co. — Capital Stock at par—as per the books	$ 112,000.00		
Improvements made on premises owned by Columbus Circle Realty Co. — per books	116,311.67		
	$ 228,311.67		
Building and improvements appraised by Gunn, Richards & Co. at $587,737.00; estimated value in the equity based on appraisal	$ 83,520.00		
New Castle Construction Co. — Bonds at par—as per the books; and estimated value, based on appraisal of property by Gunn, Richards & Co.	36,000.00		
		119,520.00	
Total real estate, buildings, machinery and equipment			$ 5,119,356.31
FURNITURE AND FIXTURES—			
Estimated value, as per office employees; appraiser's figures not yet received:			
New York office	$ 36,000.00		
Factories	40,000.00		
		76,000.00	
INVENTORIES—ESTIMATED—			
At factories, and on consignment from factories, as per actual inventory July 31, 1912, brought to September 11, 1912, by adding purchases and labor and deducting sales—as per books	$5,772,870.52		
Deduction — Reserve for obsolete material, etc., estimated by the comptroller of the company	1,024,831.72		
	$4,748,038.80		
Of this sum less than $275,000.00 is represented by completed new cars.			
Estimated Value: By Messrs. Anthony, Maxwell and Jameson for the company on the basis of a going concern for all factories, all operating, except the Brush			4,500,000.00
On the basis of closing down the Brush and Alden-Sampson factories, $4,100,000.00.			
On the basis of closing down the Brush, Alden-Sampson, Columbia and Dayton fact's, $3,000,000.00.			
ACCOUNTS RECEIVABLE—Not including inter-company accounts—as per books	$ 661,257.22		
Deduction—Reserve for doubtful accounts—as per books	73,010.70		
	$ 588,246.52		
Estimated value			550,000.00
NOTES RECEIVABLE — In hands of treasurer—as per books	$ 55,406.44		
Estimated value			34,830.20
CASH IN HAND AND ON DEPOSIT			412,027.80
CASH—Special to provide for dealers' deposits—This fund stands to credit of U. S. Motor Co. in banks as "special fund"			62,513.24
PREPAID EXPENSES: Insurance premiums — unexpired proportion—estimated value			45,440.21
Total assents other than inter-company accounts			$10,800,167.76
INTER-COMPANY ACCOUNTS—			
Accounts receivable—Due from factories to U. S. Motor Co. and other inter-company accounts—all in receivership	$4,789,713.56		
Offset by liabilities to companies in receivership—of equal amount.	4,789,713.56		
Accounts receivable—Due by branch selling companies on notes assigned to banks with endorsement	$1,303,838.25		
Unassigned notes and open account.	2,066,844.03		
	$3,370,682.28		

Court Affairs of the United Motors

Deposits Ordered Returned to Dealers—Receivers Recommend That All Plants Except Maxwell Trio Be Closed Down and Ask Permission to Issue $1,500,000 Worth of Certificates to Finance Manufacturing Schedule of 1913

NEW YORK, Oct. 29—Great activity has been displayed the past week in the affairs of the United States Motor Co. In chronological order the happenings are herewith recorded:

Court orders deposits returned to dealers; provides for settlement of claims that arose between extension and receivership, in all $133,000.

Receivers recommend that all plants be closed down except Maxwell trio and ask permission to issue $1,500,000 of receivers' certificates to finance manufacturing schedule of 1913.

Certificates are a lien on all property, but must be applied first to other assets than those of the three Maxwell plants.

Application for a general demurrer to the jurisdiction of the court is filed on behalf of Frederick D. Bond, acting for some minority stockholders.

Walter E. Flanders and the United States Motor Co. are making examinations of each other's properties in contemplation of a merger when the court tangle is settled.

Court orders form of decree of sale be settled and discussed November 11.

The Week's Doings

Roberts Walker and W. E. S. Strong, receivers of the United States Motor Co., presented their report to Judge Charles M. Hough, of the United States district court, on Monday, recommending that manufacturing of cars be abandoned in all the plants of the company except the three belonging to the Maxwell-Brisco Motor Co., and that the court should give permission for the issuance of a maximum sum of $1,500,000 of receivers' certificates to finance the beginning of the Maxwell 1913 activities.

Not a word was said officially concerning any reorganization and as far as surface indications go, all parties in interest contemplate proceeding toward a sale as the culmination of the present suit in equity which was instituted by the Brown

11, 1912, AS A GOING CONCERN, AS ISSUED BY THE RECEIVERS, W. E. S. STRONG AND ROBERT WALKER

Estimated value of the entire debt, assigned and unassigned, $1,954,995.72.		
Estimated value of the entire debt so far as unassigned		1,198,769.54
Notes receivable—E. R. Thomas Motor Car Co.	$ 5,000.00	
Estimated value, problematical		2,000.00
Accounts receivable—National Motors Co.—estimated value par		4,042.23
Accounts receivable — Providence Engineering Works—as per the books—disputed	$ 180,923.53	
Estimated value		
Total assets, other than securities owned: going concern value.		$12,004,979.53
SECURITIES OWNED IN OTHER CONTROLLED COMPANIES—		
Briscoe Mfg. Co.—Par value of capital stock owned	$ 310,000.00	
Estimated value, over and above amounts due from U. S. Motor Co. Appraisal of real estate, buildings, machinery, etc., by Gunn, Richards & Co., as a going concern $166,995.00, and auction value $121,000.00.		367,995.00
Providence Engineering Works—Par value of capital stock owned	$ 500,000.00	
Estimated value, problematical		1.00
Appraisal of real estate and buildings, by S. A. Nightingale & Co., not including machinery, to amount of $91,021.00.		
E. R. Thomas Motor Car Co.—Par value of capital stock owned	$2,400,000.00	
Estimated value		
Courier Car Co.—Par value of capital stock owned	$ 500.00	
This company has no assets—estimated value		
National Motors Co.—Par value of capital stock owned	$ 849,600.00	
Estimated value—based on equity in real estate at Boston, Mass.; New Castle, Ind.; equity in certain branch selling companies; cash; receivables, etc.		355,190.07
TOTAL ASSETS, ESTIMATED VALUE		$12,728,165.60

AGGREGATE LIABILITIES

Real estate mortgages		$ 164,540.90
Debenture bonds, bond scrip and interest		6,161,509.87
NOTES OF ONE OR MORE OF THE SUBSIDIARY COMPANIES—		
Endorsed by the U. S. Motor Co., and notes of one or more of the branch selling companies endorsed by the U. S. Motor Co., with interest		*2,194,258.12
NOTES OF U. S. MOTOR CO.—		
Endorsed by one or more of the subsidiary companies		650,820.99
CLAIMS AGAINST THE U. S. MOTOR CO. ONLY—		
Of this sum approximately $100,000 is due for goods delivered immediately prior to receivership		1,961,875.99
Claim against Columbia Motor Car Co., or U. S. Motor Co., or both		91,789.60
Notes secured by sight draft on car shipments		63,691.26
Wages of employes and accrued expenses		74,256.30
Dealers' deposits—partly offset by accounts receivable		55,113.24
Contingent liability on endorsement of notes of E. R. Thomas Motor Car Co.		†400,000.00
PROVIDENCE ENGINEERING WORKS—		
Claim made for work performed—disputed	$ 138,532.26	
Total liabilities other than inter-company		$11,817,856.27
INTER-COMPANY ACCOUNTS—		
Briscoe Mfg. Co.	$ 313,970.91	
The capital stock of this company is owned entirely by the U. S. Motor Co., and, as the Briscoe Mfg. Co. is regarded as a solvent company, this liability is taken at		
EXCESS ASSETS—		
Estimated value as shown—over liabilities as shown		910,309.33
CAPITAL STOCK—NOT INCLUDED IN THIS STATEMENT OUTSTANDING—OUTSIDE OWNERSHIP—		
U. S. Motor Co., preferred	$11,499,733.33	
U. S. Motor Co., common	12,206,350.00	
Columbia Motor Car Co., preferred	13,400.00	
Columbia Motor Car Co., common	118,000.00	
Total	$23,837,483.33	$12,728,165.60

* It is estimated that the branch selling houses can pay $756,226.18 on their notes, after providing for their local indebtedness.

† The receivers of the E. R. Thomas Motor Car Co. estimate that that company will pay from 25 to 40 per cent to its creditors.

& Sharpe Mfg. Co. Mr. Walker read the receivers' report, which was very voluminous, covering forty pages of closely written manuscript. The report described in detail the physical and financial condition of all the properties of the United States Motor Co. as outlined in the balance sheet on pages 16 and 17.

The recommendations of the receivers, so far as finance is concerned, were included in the following list:

To provide for the liquidation of selling companies and the full payment of the local creditors of such selling companies and of the dealers who dealt with such selling companies, where deemed advisable by the receivers.

The indebtedness to local creditors of the selling companies referred to amount to about $140,000 after setting off certain credits. The amount owing to dealers who did business with the selling companies is in the neighborhood of $120,000 net. In all, permission to pay $260,000 net was asked by the receivers on account of the selling companies. It was indicated that such a move would be good business for the embarrassed company because of the valuable assets that would be added to the estate after settlement of the scattered debts of the selling companies; that it would serve to continue the good will, an intangible but valuable element in the situation, and that in case of continuance of the business it would make a favorable sale easier than if the usual outlet for manufactured product was eliminated.

The second recommendation was for payment in full to the dealers who made deposits with the United States Motor Co.

Returning Dealers' Deposits

It was shown that the company held about $63,000 of such deposits and that just prior to the receivership a virtual trust fund was deposited by the company in the Central Trust Co. to provide for the protection of the dealers. The court was asked to construe this fund as a trust fund for the benefit of the dealers. It also was shown that there were certain credits of the company that should be charged against this fund, making the total net amount due the dealers about $29,000. This would leave a credit of about $33,000 for the estate.

The third recommendation was for payment in such manner as may be ordered by this court to creditors who shipped goods or furnished materials or services to the company just prior to the receivership. In this regard it was shown that claims for about $100,000 had accrued between the time certain materials were shipped to the company or services rendered the company and the appointment of the receivers.

Under the working agreement of the creditors as outlined in their letter of June 18, it was provided that all current indebtednesses of the company should be paid in cash upon delivery. The amount covered by the class of claims included in the recommendation represents materials and services contracted for under the creditors' agreement that fell due after the receivers took possession. They could not be paid by the receivers without permission of the court.

The fourth recommendation was for continuance of the business. The receivers reported that the Alden-Sampson and Brush companies were closed down except for sufficient activity to maintain the supply of spare parts likely to be required by the cars in service. The Columbia is completing its manufacturing schedule and the receivers recommend that the plant be closed down as soon as the few remaining cars are finished, except that a certain amount of work should be done in the manufacture of spare parts for cars in service. The Courier Car Co. was pronounced moribund and it was recommended that it remain so for the present.

The Dayton Motor Car Co. was reported to be finishing its manufacturing schedule for 1912 and it was recommended that the plant be closed down as soon as the present work is ended except for the making of spare parts and repair supplies. As far as the three Maxwell factories are concerned, the receivers recommend that they be closed down also by or before December 15, unless provision can be made to finance the 1913 campaign.

In this particular it was shown that the United States Motor Co. had on hand about $500,000 and sufficient quick assets, over and above the amounts asked in the first three recommendations, to make up about $800,000. That sum, with $1,500,000 to be raised by the issuance of receivers' certificates at par, based upon all the assets of the corporation, would in the opinion of the receivers be sufficient to make a good start on manufacturing for 1913 and enough to carry the operations of the company for 3 months.

Must Work Fast

It was pointed out that the element of time is the vital one in the situation and that even with the utmost celerity it will be necessary to proceed at high pressure in order to retrieve the fortunes of the company.

James N. Rosenberg, attorney for the receivers, explained with much clarity to the court that unless a manufacturing schedule was framed and material progress made at once, the effort would prove

Plans for Refinancing R.C.H. Discussed

Creditors' Committee of Nine Appointed to Manage Affairs of Detroit Corporation—Agreement to Be Submitted Stockholders for Ratification Next Month

DETROIT, Mich., Oct. 30—Special telegram—The condition of the business of the R. C. H. Corporation was fully disclosed to the stockholders and merchandise and money creditors at a meeting at the Pontchartrain hotel, on October 25.

The meeting was largely attended, the creditors present representing an indebtedness of $1,600,000. Plans for the refinancing of the company were discussed at length and an agreement was drawn up between the creditors and the R. C. H. corporation whereby the latter's affairs will in the future be in the hands of a creditors' committee of nine, the former directorate consisting of three.

Sixty per cent of the capital stock is to be under the direct control of three men chosen from this committee of nine, under the terms of the agreement. It was pointed out that this was done in order to protect the concern in the event of the death of the Hupp brothers, owners of a large proportion of the stock. This agreement is to be submitted to the stockholders and creditors for their formal ratification November 8, when the directors of the R. C. H. Corporation meet. It is expected that the entire plan will be finally adopted. The six creditors who have been placed on the directorate become practically debenture holders, but it is expected that all obligations will be cleared away within the next 18 months.

The condition of the concern's affairs may best be explained by the fact that it has grown too rapidly for its capitalization.

At the present time the corporation's books show assets over liabilities of $576,000, according to the auditing of MacPherson, Weiss & Co., certified public accountants. Domestic and foreign contracts for some 16,000 cars are in hand, while production at present is normal, the concern having 417 cars in stock in Detroit and in its branches. Materials for about 1,000 more cars are at the factory. During September 617 cars were shipped, while this far this month 342 have left the shops, it is asserted.

By the adoption of this plan the output of the plant will not be curtailed in any way, and at the same time the corporation's financial condition will be made secure, although the members of the new directorate have not yet signed the agreement, all are favorable to it.

It is understood that the following nine will compose the committee: John Kelsey, Kelsey Wheel Co.; J. F. Hartz, C. F. Hall Lamp Co.; H. S. Firestone, Firestone Tire and Rubber Co.; J. H. Clark, attorney; C. A. McCutcheon, American Gear Co.; F. M. Randell, C. H. Fuller Co.; J. H. Sieberling, Goodyear Tire and Rubber Co.; C. P. Sieder, Sieder Mfg. Co., and R. C. Hupp.

futile. He said that it was imperatively necessary that there be a volume of cars ready for market in April and May and a fair supply in March and a few in February. This, he said, would be impossible to accomplish unless work was begun practically instanter. The alternative, he pointed out, was that the plants must be closed down and scrapped along with the rest of the properties.

The fifth recommendation was that the court should give such directions as it saw fit respecting the sale of any of the properties or assets.

Object to Fourth Clause

Objection was made by Judge Bisbee on behalf of the Maxwell-Briscoe creditors to the fourth recommendation as outlined by the receivers. Judge Bisbee stated that the Maxwell company was the only solvent concern of the United States Motors and that at a sale as scrap the property would realize enough to pay its debts. He stated that it would work a substantial injustice to his clients in case the recommendation for the issuance of receivers' certificates should be approved, if the operation so financed developed into a failure. He said that the Maxwell creditors could be paid off at forced sale and that there was an element of unjustified chance involved in case of continuance, "where the only solvent company would have to bear the brunt of the risk."

Judge Hough rather leaned toward Judge Bisbee's presentation, and for a time it seemed as if a period would be placed to the affairs of United States Motors.

After recess Judge Hough took up the question and settled the matter by approving the recommendation of the receivers, but ordering that the lien of the receivers' certificates should be first borne by other companies than the Maxwell, and that if, in case of liquidation under the certificates, the properties of the Maxwell company should be applied only to the payment of any balance that might remain after all the other assets had been used to satisfy the liquidation.

Judge Hough's Ruling

Judge Hough's opinion as to the recommendations of the receivers was as follows:

Now with respect to the first application of the receivers which is as follows: The liquidation of selling companies and the full payment of the local creditors of such selling companies and of the dealers who dealt with such selling companies where deemed advisable by the receivers.

No general authority to the receivers to deal with all the selling companies will be given now or at any time. In my opinion circumstances may arise in respect to any selling company, as the word is used in this litigation, rendering it advisable for the receivers to liquidate themselves, to act as their own local courts, so they can pay their own local creditors in full; and the receivers are advised to prepare a separate petition as to each and any selling company which they wish to liquidate in the manner suggested.

The second proposition is in regard to payment in full of dealers who made deposits with the United States Motor Co.

In my judgment there has been sufficiently shown that there was an effort on the part of the motor companies shortly before the appointment of these receivers to create a trust fund for the securing of the said dealers who had not made deposits. Entirely irrespective of any question that might arise about deposits made so soon before the appointment of the receivers, it is in my judgment evidently advantageous from a business standpoint, that the claims of those dealers be settled, by offsetting deposits against amounts due, with the net result that there will become available, as I am informed if I correctly understand the receivers, the net sum of $33,000 approximately out of $62,000 now on deposit which is not now available to them in any case. They are authorized and directed to settle this matter in this way.

As to the third proposition regarding a payment to creditors who shipped goods or furnished materials or services in the interval between the creditors' committee circular of June, 1912, and the appointment of the receivers herein on September 12. As to those creditors it is directed that where the receivers are satisfied that any particular goods were not only furnished but delivered to and used in a certain factory during the period specified, that certain goods and materials may be paid for and charged against that particular factory.

As to the future continuance of the business. It is directed that the receivers have authority for a future continuance of the business along the lines indicated by them in their report. They are authorized to apply for receiver's certificates to an amount not exceeding in the aggregate the $1,500,000 mentioned by them, and in such amounts as they may deem advisable, showing their reasons therefor from time to time, and that upon the issuance of such certificates, and in the order authorizing their issue, it shall be provided that the lien thereof or payment thereof shall be made in the first instance on properties other than those of the Maxwell-Briscoe company to the end that only in the event of all the other property in the hands of the receivers being insufficient to pay the receiver's certificates, shall the property of the Maxwell-Briscoe company be touched. * * *

As to the sale of the property. It is believed that this property ought to be sold as soon as reasonably can be. The receivers in conjunction with the solicitors for the complainant are hereby directed to draft a decree of sale, concerning the form of which I give more specific directions at this time. That they do this as speedily as possible, not pausing to obtain the formal legal descriptions by meets and bounds of the real property, if any be affected, but drafting such a document as shall so show the scheme of sale proposed. That they serve notice of that proposed form of decree upon the attorneys who have appeared here today, as well as upon any who may be on the formal record on the docket of this court, and that for the purpose of discussing that form of decree an adjourned day of this meeting may be fixed. I would think 2 weeks from to-day would be ample time for that purpose.

At headquarters of the United States Motor Co. it was stated that Walter E. Flanders recently had made an inspection and appraisal of the properties of the company, and that representatives of the United States Motor Co. were at present engaged in examining the Flanders plant in Detroit looking toward a consolidation as soon as the legal tangle in the United States district court was unraveled.

Deposits of stock and claims under the proposed plan of reorganization is continuing, and a tentative limit has been set for such deposits on November 9. It is said that the amount deposited already represents a material amount more than a majority.

N. A. A. M. Calls Detroit Meeting

First Mid-Year Session to Be Held November 13-15—Many Prominent Tradesmen Called Upon to Deliver Addresses Pertaining to Industry Before Gathering of Makers

DETROIT, Mich., Oct. 28—The National Association of Automobile Manufacturers has given out the complete program of its first mid-year meeting, which takes place in this city on November 13 to 15. The first day will be devoted to business meetings of the board of directors of the N. A. A. M. and of the Automobile Board of Trade. On the following 2 days, papers by a number of prominent figures in the industry will be read, as follows:

NOVEMBER 14—MORNING.

The National Association—What Has Been Accomplished and What Can Be Accomplished—S. A. Miles.
Multiplicity of Models—G. W. Bennett.
Some Selling Problems—Hugh Chalmers.
Yearly Models—C. C. Hanch.

AFTERNOON

Relation of the Volume of Motor Carriage Business to the Volume of Commercial Car Business.—David Beecroft.
The Commercial Car—S. D. Waldon.
Why All Manufacturers Should Use the Standard Warranty—Walter C. White.
Traffic—J. S. Marvin.
Injudicious Methods of Selling Commercial Vehicles—M. L. Pulcher.

NOVEMBER 15—MORNING

Good Roads—R. D. Chapin.
Territory and Discounts—E. R. Benson.
Labor Conditions—H. M. Leland.

NEW DETROIT CONCERNS

Detroit, Mich., Oct. 28—The Phipps Electric Automobile Co. has been organized by Joel G. Phipps for the purpose of manufacturing electric motor cars. Mr. Phipps was formerly general manager of the Grinnell Electric Car Co. A coupe model already has been built by the new concern.

The Detroit Puncturine Co. was recently incorporated in this city. The officers of the concern are M. H. Chamberlain, L. N. Taylor and K. R. Montgomery. The concern manufactures a tire compound which is intended to heal punctures and cuts in the envelope. A small amount of the preparation is put into the tire and in the event of a puncture, is said to flow to the hole, filling it immediately and hardening, preventing any appreciable escape of air.

HAY QUITS FORD SERVICE

Chicago, Oct. 30—Thomas J. Hay, for 7 years manager of the Chicago branch of the Ford Motor Co., created a local sensation by retiring from his position Monday morning. His successor is Dayton Keith, who has been managing the Indianapolis Ford branch. Mr. Hay has several plans in view as to his future, but is not ready to make any statement.

LUCE MAKES A CHANGE

Chicago, Oct. 28—Morton H. Luce, manager of the Chicago Velie branch, has resigned that position to become sales manager for the American and Marion Sales Co. of New York. He will make his headquarters in New York city and will handle territory which includes New York, Pennsylvania, Maryland, Delaware, New Jersey and New England. Luce leaves here November 10.

Autumn Activities of the Motorists

Charles J. Glidden Reaches New Orleans Over Lakes-to-Gulf Route—York Entertains Lancaster Club—DePalma Able to Get Out of Doors—Track Meets at San Antonio and Louisville—Contest Board Rulings

NEW ORLEANS, Oct. 28—Declaring his welcome to New Orleans the most cordial he ever had received in any city, Charles J. Glidden stepped from his 1913 Maxwell here Saturday night at the end of his tour from Detroit, having made the trip on schedule time.

"There were just enough bad roads to make the run interesting," Mr. Glidden said.

New Orleans cars awaited the tourists at Baton Rouge, 100 miles up the river, and extended the first greetings. Every few miles between the state capital and the city other cars came up and took their places in the procession. In the late afternoon a cavalcade a mile long swung into the city and was cheered almost continually during the parade through the business section.

At a banquet Saturday night Mr. Glidden told the story of the trip. There was no doubting that it had been filled with interest for every participant when his narrative was finished. He held that there was no more enticing or healthful recreation and that interest was heightened by the requirements of the tour. This, he said, was his answer to those who said that the tour had outlived its interest.

Trips to points of historical interest and a journey up the river in an old-time steamboat occupied Sunday and Monday. Monday afternoon Mr. Glidden spoke on good roads at a luncheon in his honor at the progressive union. Mr. Glidden favors reversing the route if the tour is held next year, starting from New Orleans instead of Detroit.

YORK ENTERTAINS LANCASTER CLUB

York, Pa., Oct. 28—The track meet here Saturday was attended by about 1,500 persons including many members of the York Motor Club and the Lancaster Motor Club, which held a socialbility run to York and were the guests of the local organization. In the second and third events of the races in which the Klinekar driven by Minher, and the Pullman driven by Gillard there was a close rivalry for first place throughout. Both events were taken by Minher.

The party of about forty members of the Lancaster Motor Club, left Lancaster at 10 o'clock in the morning on the run to York. After checking in at the National hotel the Lancaster party proceeded to the fair grounds to witness the races. The prizes to the Lancaster motorist running to York nearest to the secret time set by Major Frank B. McClain of Lancaster, were awarded during the races by Paul Gilbert, president, of the York club.

The sealed time was 1 hour and 13 minutes. John M. Binkley, Lancaster, in an Overland was awarded the first prize, his time being 1:14¾. E. H. Eshbach, Millersville, in a Regal won second prize. His time was 1:15:10. After witnessing the races the visitors were entertained with a banquet by the York club at its new home along the Wrightsville pike east of the city. Nineteen cars were entered in the run. Summaries of the track meet:

Five miles, for cars under 301 cubic inches—Freitag, Mercer, won; Tambright, Ford, second; Anderson, Pullman, third. Time, 6:29⅘. Also ran, Gillard, Pullman.

Five miles, for cars under 451 cubic inches—Minker, Klinekar, won; Gillard, Pullman, second; Richley, Buick, third. Time, 6:03⅕. Also ran, Freitag, Mercer; Schnaeder, Pratt.

Five miles, for cars under 601 cubic inches—Minker, Klinekar, won; Gillard, Pullman, second; Oden, Simplex, third. Time, 6:08⅖. Also ran, Anderson, Pullman; Schnaeder, Pratt.

Five miles, free-for-all, handicap—Richley, Buick, won; Tambright, Ford, second; Minker, Klinekar, third. Time, 7:09⅘. Also ran, Anderson, Pullman; Gillard, Pullman; Freitag, Mercer; Oden, Simplex.

DE PALMA GETS OUT OF DOORS

Milwaukee, Wis., Oct. 29—Ralph de Palma, winner of the 1912 Vanderbilt cup race, and runner-up to the winner of the 1912 American grand prix until an accident put him out of the running in the last lap, will be able to do without doctors and nurses by the end of the present week. Last Saturday Ralph and Mrs. de Palma were known spectators at the football game between Marquette university and Lawrence college. De Palma sat through the game without feeling it and afterward got to his wheeled chair unassisted and went back to Trinity hospital for the night. On Sunday he was about bright and early and with permission of the physicians he discarded the slow invalid's chair at noon and went down town on crutches with his wife to have dinner in the Hotel Pfister. During the afternoon the couple attended a vaudeville show and took supper down town, returning to the hospital for the night.

The Milwaukee Automobile Dealers' Association is still working to raise funds to cover the $43,000 deficit and is succeeding fairly well.

RESULTS AT LOUISVILLE

Louisville, Ky., Oct. 27—Over the historic 1-mile dirt racing track at Churchill Downs, nine well-contested motor races were run this afternoon. About 3,000 persons witnessed the events. The exhibition of Louis Disbrow, driving his Simplex Zip and his Jay-Eye-See, was the feature. No records were lowered. Summary follows:

Exhibition trials to establish handicaps, 1 mile—Simplex Zip, Disbrow, :53⅖; Case Bullet, Nikrent, :57; Hotchkiss, Kilpatrick, :57; Case Tornado, Endicott, :57⅕; Lozier, Martin, 1:05.

Five-mile match race, class E—Nikrent, Case Bullet, won; Endicott, Case Tornado, second. Time, 5:21⅖.

One mile exhibition by Louis Disbrow in Jay-Eye-See. Time, :58.

Australian pursuit race, class E—Disbrow, Simplex Zip, passed Kilpatrick, Hotchkiss; Nikrent, Case Bullet, and Endicott, Case Tornado, winning the race in 6 miles. Time, 5:45.

Two miles—Disbrow, driving Jay-Eye-See against southern dirt track record of 1:49⅘. Time, 2:08.

Two-mile event for local cars—Martin, Lozier, won; Filson, White, second. Time, 2:23.

Five miles, free-for-all, class D—Disbrow, Simplex Zip, won; Endicott, Case Tornado, second; Kilpatrick, Hotchkiss, third. Time, 5:22.

Free-for-all handicap, class D, 3 miles—Nikrent, Case Bullet, won; Disbrow, Simplex Zip, second; Martin, Lozier, third. Time,

RACING AT SAN ANTONIO

San Antonio, Tex., Oct. 27—Special telegram—The harvest jubilee 3-day meet came to a successful termination today, the feature being the establishment by Barney Oldfield in his Christie car of a new record of 50⅕ seconds, electrical timing, for 1 mile on a ¾-mile track. The Mercedes, driven by George Clark, won the continuation race on each of 3 days with a total mileage of 129.75 for 2:15:00 elapsed time. No accidents marred the meet, which was seen by the largest crowds ever gathered at the local track. The loop was heavily oiled and the oil was worked in. Raimey's work in the Ohio car was one of the big features. There were purses aggregating $3,000 for the 3 days' racing. Summary of the 3 days' racing:

FIRST DAY

Six miles, class E—Heinemann, Cino, won; Oldfield, Benz, second; Raimey, Ohio, out on seventh lap with engine trouble. Time, 6:01.

Nine miles, class 3C—Heinemann, Cino, won; Raimey, Ohio, second. Time, 9:02⅕.

Nine miles, class 2C—Mosley, Studebaker 20, won; R. Johnson, Studebaker, second; Craig, E-M-F, threw tire and went out on seventh lap. Time, 10:00⅖.

Six miles, class E—Raimey, Ohio, won; Oldfield, Benz, second; Mosley, Studebaker 20, third; Heinemann, Cino, fourth. Time, 6:08.

Mile time trials for track record :52⅘, held by Oldfield, flying start—Oldfield, :51; Clark, Mercedes, :55⅘; Raimey, Ohio, :58⅘; Heinemann, Cino, :59⅖.

Continuation race, free-for-all, cars to run 45 minutes each day for 3 days, results of first day—Clark, Mercedes, fifty-nine laps in 45:41⅘; Mosley, Studebaker, fifty-seven laps in 45:02⅕; Raimey, Ohio, fifty-five laps in 45:28; Craig, E-M-F, forty-nine laps in 45:19; Oldfield, Benz, forty-six laps in 45:29; R. Johnson, Studebaker 20, forty laps in 45:13⅖; Heinemann, Cino, out in twenty-third lap with bad rear wheel.

SECOND DAY

Six miles, class 3 and 4C—Raimey, Ohio, won; Oldfield, Benz, second; Johnson, Studebaker, third. Time, 5:57.

Nine miles, class D—Clark, Mercedes, won; Heinemann, Cino, second; Raimey, Ohio, out on last lap with engine trouble. Time, 8:36.

Nine miles, class E—Johnson, Studebaker, won; Craig, E-M-F, second; Mosley, scratched. Time, 12:00.

Mile trial records—Moore, Buick, :64⅖; Oldfield, Benz, :56; Clark, Mercedes, :54; Oldfield, Christie, :51.

Nine laps, class E—Heinemann, Cino, won; Johnson, Studebaker, second; Raimey, Ohio, out because of break in feed pipe.

THIRD DAY

Twelve miles, class E, division 300 cubic inches and under—Raimey, Ohio, won; Mosley, Studebaker 20, second; R. Johnson, Studebaker, third. Time, 11:12⅘.

Six miles, class E, 300-450 cubic inches—Raimey, Ohio, won; Heinemann, Cino, second. Time, 5:55.

Six miles, class D, free-for-all—Clark, Mercedes, won; Heinemann, Cino, second; Mosley, Studebaker, third. Time, 5:43.

Mile trial—Oldfield, Christie, first in :50⅕; Clark, Mercedes, second, :54 electrical timing. Two starters.

Six miles, class 3C, 300 cubic inches and under—Raimey, Ohio, won, being flagged off on sixth lap after Cino had thrown a tire. Two starters.

Match race, 9 miles—Raimey, Ohio, won; Oldfield, Benz, second. Time, 9:02⅘.

Continuation race, free-for-all, cars to run 45 minutes each day on 3 days, total results—Clark, Mercedes, won, 129¾ miles; Oldfield, Benz, second, 105¾ miles; Raimey, Ohio, third, 91½ miles. Five starters on last day.

CONTEST BOARD RULINGS

New York, Oct. 28—Several important rulings were made at the meeting of the contest board of the American Automobile Association last week covering appeals, disqualifications, etc. The gist of the rulings follows:

Studebaker Corporation appeal in Minneapolis-Winnipeg run against disqualification for cutting course was dismissed and class trophy awarded to Hupmobile.

The Pittsburgh Mercer Auto Co. was suspended until January 1 for mis-advertising contestants in a non-stock meeting as stock cars.

The George C. Brinkman Motor Car Co., of St. Louis, was suspended until January 1 for failure to start a Nyberg car entered at a recent race meeting.

Charles W. Canner, registered driver, was suspended until January 1, 1915, and E. V. Rickenbacher, January 1, 1914, for participation in various unsanctioned race meetings in Iowa and Nebraska where Canner campaigned the Marshall flying squadron and met with some serious mishaps, owing to the carelessness and disregard of the precautionary rules of A. A. A.

SCHIMPF TROPHY RUN BILLED

New York, Oct. 28—For the second time the Schimpf trophy event under the auspices of the Long Island Automobile Club will be run off November 9. Last year the run attracted quite a field of club men and the prospects for this event are reported promising. The run is a sealed time affair over a course of about 50 miles. The unusual feature of the rules is that the sealed times will be different for everybody in the field and the winner will be determined by the degree of exactness with which he approximates the particular time he selects. Owners must drive.

REBUILDING SPEEDWAY EQUIPMENT

Indianapolis, Ind., Oct. 28—The Indianapolis motor speedway is to tear down the present press stand, judges' stand, refreshment and executive buildings and all other stands grouped near the start and finish line and behind the pits. One large, modern pagoda building is to supplant the entire lot. This building will accommodate those in charge of the race in the following way:

On the lower, or ground floor, will be located the telegraph and electrical appliances. On the second floor will be the timing and scoring devices. The press will be taken care of on the third floor, and on the fourth floor the judges and officials will have high, roomy accommodations. The fifth floor is for the management and executives. Other changes being incorporated by Manager of Events Charles W. Sedwick are the installation of more efficient scoring service and a general improvement in the utilization of parkage and paddock space.

Mr. Sedwick sails about November 1 for Europe, where he will discuss the May race meet with the most prominent European manufacturers.

ASKS MARYLAND RECIPROCITY

Washington, D. C., Oct. 26—Plans are under way to bring about a reciprocal agreement with Maryland, that state having a law which effectually bars Washington motor car owners from using Maryland roads unless they have a Maryland license. The chamber of commerce is investigating the matter through its secretary, and it is also stated that the Touring Club of America will endeavor to bring about some agreement whereby Washington motorists can use the Maryland roads without having to pay the heavy license fees now being charged.

Several means of retaliating for the injustice which Washington motor car owners claim is done them by Maryland have been suggested. The agitation may result in a regulation by the district commissioners or a change in the law, if that is necessary, requiring Maryland motorists to pay the same license fee that is charged district motorists.

The fee here is $2 and the license is good so long as the licensee owns the machine for which it is granted. It is estimated Washington motorists are paying nearly $50,000 per annum for license fees in Maryland, whereas Maryland motorists coming into Washington pay practically nothing, temporary permits being given them without cost. Efforts have several times been made to secure a reciprocal agreement with Maryland, but each time without success, the Maryland authorities being quick to recognize the fact that Maryland offers practically the only outlet for Washington motorists who wish to tour.

In view of the fact that Maryland grants reciprocity to every state in the union but insists upon the District of Columbia paying the full license fee of from $5 to $25 per car, motorists here think some consideration should be given them. They put forth the claim that they spend large sums of money in the state while touring and this fact should be taken into consideration.

The chamber of commerce has determined to sift the matter to the bottom and the agitation is likely to result in a change for the better, which will meet with the approval of all motorists.

ROAD RACE POSSIBLE

Baltimore, Md., Oct. 28—The county commissioners of Frederick county, Md., have endorsed the road race between Frederick and Emmitsburg, that county, by giving permission to those who will drive in the race to operate cars at a speed greater than 25 miles an hour. Motor Vehicle Commissioner Roe said that the race could be run provided the permission of the commissioners was obtained. The race will be held under the auspices of the Frederick News and Emmitsburg Chronicle.

European Tribute to the Late David Loney Bruce-Brown

BRIEF, but brilliant was the career of David Bruce-Brown, killed at Milwaukee while practicing for the grand prix of America, of which he had twice been the winner. Although he had won great fame and popularity at home, David Bruce-Brown was practically unknown in Europe until his appearance in the grand prix last June, in which event he drove a Fiat, led at the end of the first day, and was struggling hard with Boillot for first place on the second, when the breakage of a petrol feed pipe necessitated the taking of fuel away from the pits, and entailed disqualification.

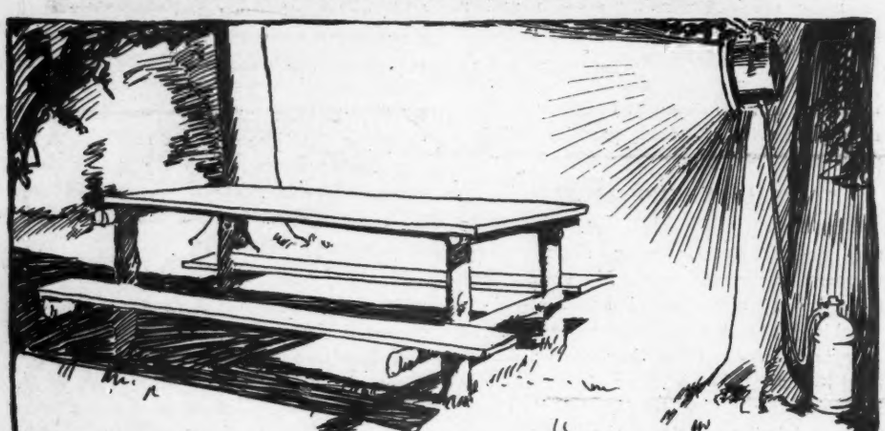
"In the history of racing no finer display than that of the American driver on the Dieppe hairpin turns and before the grandstands has ever been seen. America has long possessed good race drivers, but never before the appearance of Bruce-Brown on the Fiat have they taken part in European events on machines capable of proving their worth.

"Bruce-Brown was typically American in his style of driving—possessed of a craze for speed as soon as the word was given; a man having no mercy for his machine; a driver determined to get the most out of it from beginning to end. But coupled with this wild dash was a consummate skill in the handling of his car which it is given to few men to possess. Bruce-Brown's work at the tire pits at Dieppe undoubtedly was the most brilliant Europe ever has seen. The leading continental drivers, men who have been trained to racing since the earliest days of the motor movement, were commonplace in comparison with the extraordinary combination of wild fury and calm reasoning shown in every movement of the American driver of only 3 or 4 years' racing experience.

"His was a most charming personality, and he conveyed, insensibly, to all who observed him and his doings, the true racing atmosphere. His perfect preparations, the mastery of his car, the absolute absence of anything approaching "playing to the gallery," his extraordinary strength, shown by the way in which he lifted great cans of spirit shoulder high for replenishing his tank, the trained rapidity of his replenishments—all served to convey an impression of earnestness and thoroughness that no other racing driver quite conveyed, the nearest approach being perhaps Boillot. He was a born racing motorist, having all the pluck, power and vim necessary for so arduous a task, and his loss will be greatly felt."—The Motor of England, October 8.

Routes and Ingenious Methods for Equipping Cars

LAYOUT OF CAMP IN WISCONSIN HUNTING TERRITORY



ACETYLENE TANK AND HEADLIGHT USED FOR ILLUMINATING CAMP IN WOODS OF NORTHERN WISCONSIN

By Morton H. Luce

A VERY pleasant way to spend a vacation, and an inexpensive one at that, is to travel by motor car through the northern Wisconsin district. Those who enjoy a virgin country and desire good hunting and fishing will find fall the best time for such a trip.

Equipment has a great deal to do with the comforts in a camping trip of this kind, but one can purchase every known equipment, not only in tents and such, but also in canned goods for the dinner table.

In starting out on the expedition which we took in late September our first thought was to utilize all the available room on the running board, fenders and body, and around the sides of our Velie car for the carrying of our supplies. A duffle bag, which is water-proof, very readily straps on the back with the inflated tire, as shown in Fig. 3, in which one can carry all bedding and wearing apparel required. In camp this bag is used the same as a trunk. It can be rained on with no ill effects to its contents. The large tool box on the side of the car carries all supplies such as canned milk, egg powder, which takes the place of fresh eggs and meats; and on arriving in camp this makes a very agreeable box to keep butter, fresh meats, game, in fact acts as a storage place to keep the gophers and porcupines and other prowlers from destroying the eatables.

Also in Fig. 2 is shown below the extra tires a steel box carried between the spring and hung to the axle level, in which is carried additional supplies for cooking eatables and such. Light tents, known as pup tents, only large enough for sleeping quarters are carried. These are very readily strapped on the running board, or placed between the fender and hub and strapped to the frame. They fit in nicely.

There also was carried on this special trip, as pictured, two gasoline stove burners, which could be attached by a rubber connection to the gasoline tank for cooking breakfast while traveling, taking practically no space, and when not in use was disjointed and stored in the small space around the tank or in the corners not utilized for larger parts.

It is necessary in going through a country such as Wisconsin, where the roads

Road Directions for

COLORADO TO INDIANA

MANITOU, COLO.—Editor Motor Age—I am planning a trip from here to Anderson, Ind., and would like to know the best route for this time of the year. I have a log from Colorado Springs to Kansas City which is supposed to be the best route and would like to know something about the balance of the route.—Subscriber.

It is a 2-day run across Missouri. Between Kansas City and Boonville, where you cross the Missouri river by ferry, you run through Centropolis, Evanston park, Independence, Blue Springs, Grain Valley, Oak Grove, Odessa, Mayview, Higginsville, Corder, Blackburn, Mt. Leonard, Marshall, Arrow Rock and Lamine. New Franklin is on the north side of the river and the road to St. Louis lies through Rocheport, Columbia, Millersburg, Fulton, Calwood, Williamsburg, Mineola, Danville, High Hill, Jonesburg, Warrenton, Truesdale, Wright City, Floristell, Wentzville, Colterville, St. Charles, Pattonville and Wellston.

Indianapolis is 244 miles from St. Louis and is reached through Collinsville, Troy, St. Jacobs, Highland, Pocahontas, Stubblefield, Greenville, Mulberry Grove, Hagerstown, Vandalia, Bluff City, St. Elmo, Altamont, Effingham, Teutopolis, Montrose, Woodbury, Greenup, Casey, Martinsville, Marshall, Terre Haute, Seeleyville, Staunton, Turner, Brazil, Harmony, Reelsville, Manhattan, Mt. Meridian, Stilesville, Belleville, Plainfield and Bridgeport.

After a continuous rainy spell this road is not a good one, and no difficulty should be experienced under any other conditions.

Anderson is then 44 miles from Indianapolis over level country and good gravel roads through Cumberland, Greenfield, Maxwell, Eden, and Pendleton.

SAVANNAH TO TAMPA

Madison, Me.—Editor Motor Age—Will Motor Age give me the best route from Savannah, Ga., to Tampa via Jacksonville? Is the road bad or fairly good?—A. E. Moore.

Along the coast the towns are Freedman's Grove, Midway cemetery and Riceboro, crossing several bridges and over a bad stretch of corduroy road into Eulonia. Then going to Darien, it is an hour's trip, costing $5 for a single car to ferry to Dent. You then proceed to Brunswick, Old Sterling, Brookman and Tarboro and Owens ferry and a charge of $1. Sixteen miles more and the King's ferry will take the car across St. Mary's river, the charge being $1. Thence continue to Callahan and Jacksonville. Brunswick to Jacksonville is 100 miles, over mostly fair dirt roads through pine barrens, with an occasional stretch of deep sand.

The inland road to Tampa is reported to be in fine shape, routing through Highland, Lawtey, Starke, Gainesville, Evanston, Ocala, Iverness, Brooksville, Trilby, Dade City, Greer, Knights, Plant City, Dover, Seffner, Mango and Tampa. This distance is 246 miles.

With the exception of the road from St. Augustine to Ormond, the shore route from Jacksonville to Tampa is in unusually good condition. It is necessary to ferry out of

Touring Information

for Camping and Hunting Expeditions

have been used for logging purposes and where very few motor cars have traveled, to arrange to make difficult grades and to overcome the deep sand and mud. There are many corduroy roads in this district. Chain grips are necessary and when not in use on the motor car, they make a very agreeable stove top by stringing them over the fire. Skillets and such are supported by these while cooking.

It will also be noted in Fig. 2 the Prest-O-Lite gas tank was detached from the car and one of the headlights was suspended for lighting purposes; also the tarpaulin which is used for a car cover is stretched over poles for a kitchen and dining tent during stormy weather. This canvas also is used in touring to throw on the car where mud is deep, and also when the car travels over sand it is thrown down to give traction, the car traveling over it, thus avoiding many road difficulties.

The electric lighting system as equipped on motor cars is very handy while in camp, an extension light is carried from the storage battery to the cooking or sleeping tents, and each person has all the city conveniences in the electric lighting system; then again the electric headlights are used for stronger lights. It always is necessary to carry a hand ax and shovel; plenty of nails, not only to assist in getting through the country on the trip, but to build the camp when it is located. It is well to be equipped with sleeping bags and upon arriving in camp, there always is a farmer in some nearby district, where one can go with a camp car to haul a good sized load of hay to distribute upon the ground upon which to sleep. This saves carrying many things, and allows tourists to travel light in expeditions of this kind. In all cities en-route you will find people very willing to furnish maps and give you descriptions

TYPICAL SCENE IN FORESTS OF NORTHERN WISCONSIN

MOTORING CAMPERS USE STORAGE BATTERY TO LIGHT SLEEPING TENTS AND DRAW GASOLINE FOR COOKING FROM CAR'S TANK

Touring Readers

South Jacksonville, the car and driver being taken across for 25 cents and for each passenger the charge is 5 cents. Many bridges are encountered en route to St. Augustine and Moultrie. About 1½ miles from Fort Moultrie you will pass the oldest house in America, and it is well worth a stop. Continue through Ormond, Daytona, DeLand, Orange City, Monroe, and after crossing the St. John's river by ferry the road leads to Sanford and through the great celery beds of that town, and on to Longwood, Maitland, Orlando, Pine Castle, Kissimmee, Campbell, Loughman, Davenport, Haines City, Winter Haven, Eagle Lake, Bartow, Lakeland, Plant City, Dover, Seffner, Mango and Tampa.

ANOTHER HEADED WEST

Mitchell, S. D.—Editor Motor Age—Please outline a route from Mitchell, S. D., to Los Angeles, and state if there is more than one, and if so, which would be the most advisable for travel this time of the year. Also state how long it should take to make the trip and what equipment is necessary.—A. Miller.

With the object of traveling over the Meridian highway go east from Mitchell to Emery and Bridgewater, 51 miles, then follow the routing given to the Huron, S. D., inquiry. It would be a good thing if you would get into communication with W. C. Dawson with the idea of both cars traveling together.

There are a number of roads for you to choose from until you reach Trinidad, Colo., but they all take you through the Colorado mountains and it is probably just as well to avoid them now.

As for equipment, you will find a 5-gallon milk can filled with gasoline and strapped on the running board very useful on extra long stretches, then of course you need a shovel, some heavy rope, a couple of long narrow strips of canvas for use in deep sand for traction, canvas bucket for carrying water, and some crackers and canned food stowed away in an out-of-the-way corner will strike the spot sometime when you are late getting into your night control.

PLAINVILLE, KAN.—AMARILLO, TEX.

Lawrence, Neb.—Editor Motor Age—Please give me the best route from Plainsville, Kan., to Amarillo, Tex.—H. Schroer.

Routing through a number of small towns along the railroad go east to Sylgan Grove, then south on the Sunflower trail to Wilson, Claflin and Ellinwood, which also is on the Santa Fe trail. This trail is then followed 97 miles to Great Bend, Dundee, Larned, Garfield, Kinsley, Offerle, Spearville, Wright and Dodge City. Leaving Dodge City you go to Liberal, thence across the short strip of Oklahoma country to Texhoma, Stratford, Dumas and Amarillo. From the Canadian river to the outskirts of Amarillo the going is not good. Care should be used in crossing the river on account of the quicksand.

The only stretch of this route on which you can get running directions is between Sylvan Grove and Dodge City. This can be found in the Blue Book No. 5.

STOOP'S CAR FIRST TO CROSS FERRY. BRIDGE TO BE BUILT SOON

of the best and most pleasant places to camp where you will have good hunting and fishing and a very enjoyable time. It is really perceptible to notice the courtesies which are shown motorists who are touring and camping on their vacations.

In arranging a tour of this kind it is quite essential to plan gasoline control. A 10-gallon milk can of gasoline was carried as an additional supply, and it was necessary to use this after leaving town, as in some small cities you will find there are no garages. By all means in taking a trip of this kind carry plenty of eatables. If you get into good fishing and hunting district you will find very few farmers, and you will be unable to get the necessary eatables outside of the fish and game which one will have many pleasures in procuring.

Without doubt this is the most pleasant way to spend a 2 weeks' vacation.

CANADIAN PARK STILL CLOSED

The Canadian National park, at Banff, Alta., is still forbidden territory to motorists. Efforts are now being made by the Calgary Automobile Club to have the highways of this beautiful park opened to the cars, but the efforts have, so far, been unsuccessful. Only last week a couple of wealthy Calgarians endeavored to slip across the village of Banff and into the park with their cars, but were quickly caught by the officers on duty and an unfeeling magistrate assessed fines of $25 each. Last summer the Calgary Automobile Club had a fine road constructed from Calgary to the mountains, but it appears as if the members will have little use for it, for all the beauty of the trip lies along the park roads. It is believed that the dominion government will consent to the opening of the park to motorists next spring.

Old Railroad Now Motoring Highway

KALISPELL, Mont.—Editor Motor Age —When the Great Northern Railway abandoned its line west of Kalispell to Jennings, a distance of about 75 miles, little thought was given that it might be used some day as a fine driveway for motor cars, for at that date very few cars were owned in Kalispell, but now that the demand has arisen for an outlet west to Spokane, this old roadbed is being pressed into service by removing the ties and grading it down.

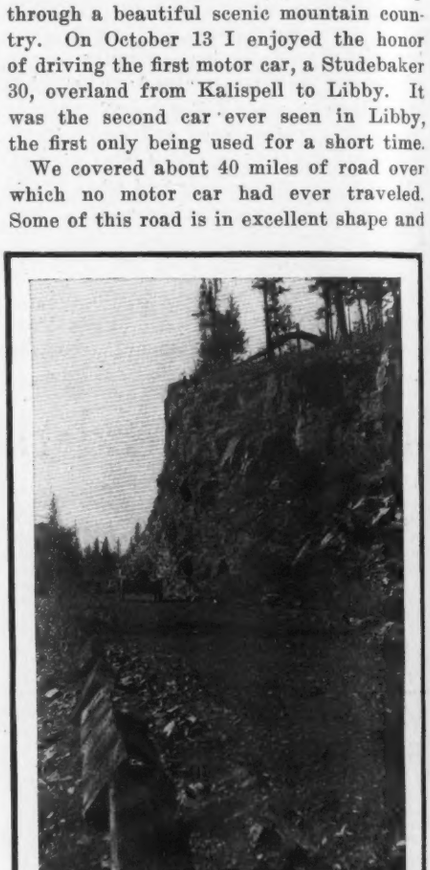
The high trestles are widened by planking them with the old ties, using them 2 wide or 16 feet, instead of eight and installing a good railing. This makes a very satisfactory bridge. The Haskell pass tunnel, which is about ⅛ mile in length, is in perfect condition, with the exception of some water, and adds thrills to the motorist who cares to open the cutout and press the electric horn button.

The old crossing and whistle posts are still in position and when driving along over this route with a little imagination thrown in, all the parts of a Fast Mail or California Limited can be played. The driver can be the engineer, someone can call the stations, etc., but no one need lose their job if the train is late.

At a very recent date I had the pleasure of making this trip, together with Mrs. Stoop, taking our time, stopping along the way when we felt like it, taking pictures, catching trout and shooting grouse. We had our bed and provisions with us, for it is through a beautiful country, full of wild game and houses very far apart. We camped out two nights and returned home feeling that we had enjoyed one of the best trips of our lives.

In getting a good motor road west from Kalispell to Spokane through Libby, Mont., two routes are feasible and both probably will be used. One of them over this old abandoned railroad line through Jennings and another leaves this old line at a little station called Marion, leads southwest a few miles and thence westerly, by McGregor and Thompson lakes, down the Fisher river, crossing over and following down Libby creek into Libby. About 40 miles of this is new road, just opened up through a beautiful scenic mountain country. On October 13 I enjoyed the honor of driving the first motor car, a Studebaker 30, overland from Kalispell to Libby. It was the second car ever seen in Libby, the first only being used for a short time.

We covered about 40 miles of road over which no motor car had ever traveled. Some of this road is in excellent shape and



ROCK CUT ON LINE BETWEEN KALISPELL AND JENNINGS

WEST END OF TUNNEL UNDER HASKELL'S PASS, NOW USED BY MONTANA MOTORISTS

Yosemite Bars May Be Dropped Soon

as soon as the remaining links and stretches are finished, it will be first class.

There is yet talk that the Great Northern might decide to relay steel on its old grade and for this reason it was thought better to have this other road in good shape to assure having a good highway for all time. Besides parties making the trip to Spokane can have a choice of routes or go one way and return the other. The people of Libby are very energetic and realize what it means to be on a through route. This road will be known as the Kootenai-Glacier Park road and will be open for travel from Kalispell to Spokane next year.—Frank D. Stoop, secretary Flathead Motor Club.

TRESTLE USED FOR BRIDGE ON KALISPELL-JENNINGS MOTOR ROAD

NO immediate results are to come from the conference with the secretary of the interior regarding the opening of the Yosemite valley of motor cars. The most encouraging feature of the meeting was the announcement of Secretary Fisher that he was heartily in favor of the admission of the cars into the valley if they could get in safely, and the problem that he put up to the motorists and commercial bodies of California was to show him just how this could be done. United States army engineers are now checking up reports and surveys on the various roads into the valley, and nothing whatever will be done pending an official report on these.

The conference with Secretary Fisher was at once an achievement and a disappointment. It was not known that he was personally in favor of the admission of cars to the great California wonderland, and it was expected that it would be necessary to appeal to him along oratorical lines and persuade him that the rickety old stage coach, while picturesque, should give way to the up-to-date motor bus and pleasure car. The secretary, however, at once dispelled all doubts as to his position on this phase of the matter, and said that all he wanted was concrete information—facts and figures. The conference was held on the floor of the valley, and Fisher, having just staged in, evidently had his own opinion as to the safety of the roads in their present condition. He sought all available information on every one of the three routes that at the present time are used only by horse-drawn vehicles.

The most comprehensive data laid before the meeting had been gathered by the Automobile Club of Southern California. The latter had had its own engineer and surveyor in the valley practically all summer and had his figures and estimates for each of the routes. The southern report, which was presented by ex-United States Senator Frank P. Flint, favored what is known as the Wawona road, which comes into the valley from the south. This report would then permit the cars to leave the valley by the northern route, known as the Big Oak Flat road, so that they would go in one way and get out another, not covering the same route twice.

VIEW FROM TOP OF HASKELL PASS ON OLD LINE OF GREAT NORTHERN

The report estimated that it would take about $25,000 to place the Wawona road in condition, and this is where the rub comes, for Secretary Fisher declared that there was absolutely no money at the command of the interior department for the work. He urged the Californians to get their congressmen to seek a special appropriation.

One of the suggestions that was made, and one that appears quite likely to be carried out first as a test of the valley roads, was that the Wawona road be opened as far as Glacier Point. This is at the rim of the valley, and from this point it is possible to secure a complete view of the superb valley lying 4,000 feet below, almost in a straight drop. This feature was urged not only by the southerners, but was endorsed also by one representative of the north, President Percy J. Walker of the California State Automobile Association. This is regarded as an opening wedge, to be followed later by the admission of cars to the floor of the valley.

It is felt that the government not only should admit motor cars to the park but also it should provide means whereby the roads can be improved.

STOOP'S STUDEBAKER TRAIL-BLAZING FROM KALISPELL TO LIBBY, MONT.

Three-Point Suspension

Revival of Discussion of Live Axle Types by Interested Northwestern Motorist

TACOMA, Wash.—Editor Motor Age—In reading the specifications of many motor car companies, one frequently mentioned is three-point suspension. Does this refer only to the suspension of the engine on the frame by three points of contact, or does it refer also to the frame in its support? Is it really a very decided point of advantage for the engine to have but the three points of support? Does not the Packard engine have four points of support? If there are some standard makes of cars having four-point engine support, please give the names of some of them.

2—What are the advantages of the floating axle over the semi-floating type? Are there no disadvantages? If there are any high-priced cars using the semi-floating floating type, please gives the names of a few of them.—B. H. Foreman.

1—Three-point suspension is a general term that refers to the suspension of bodies by three points, and has several applications to motor car design. The commonest of these is the three point support of the motor, and three-point suspension of the frame. When three-point suspension is specified as a separate feature, it is understood as referring to the frame suspension. When it is included in the description of the motor it refers to the motor.

The advantages advanced for three-point suspension are as follows: A motor mounted to the frame by three points is not subjected to any strains upon the warping of the frame, as illustrated in Fig. 2. The jarring from the road is less severe on a three-point suspended frame, because at the end at which it is suspended by one point, lateral motion of the axle has very little effect upon the frame, so that in going over a bump on one side of the road it is seriously felt but once, although both axles are deflected by it. Three-point suspension permits of flexibility of the frame without loss of strength, thereby saving weight, as it requires greater strength to suport a load rigidly than flexibly.

Many prominent motor car designers are adherents to the four-point form of motor support, not from any objection to the three-point principle, but because in practice the four-point support has been found satisfactory. This would seem to indicate that the advantage of the three-point idea was not decided in practical use.

The Packard for many years used a four-point engine support on its four-cylinder cars, but it has found it advantageous on the longer six-cylinder motors to use the more flexible form of suspension, viz.: the three-point. Other makers who have used and are now using a four-point engine support are the Peerless, Alco, Locomobile, and Oldsmobile.

The Readers

Floating vs. Semi-Floating Axles—Commendation by Reader of Action Regarding Garage Evils—Who Makes Novel Engine and Transmission

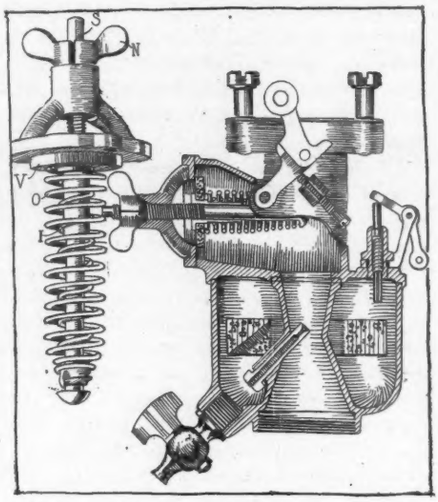


FIG. 1—ADJUSTMENTS OF E-M-F CARBURETER

2—The advantages of a floating axle over a semi-floating axle are that whereas in the semi-floating type of axle the wheels are secured rigidly to the drive axles and are supported on bearings between the latter and the axle tube, the drive axles of the floating axle are flexibly clutched to the wheels, run on separate bearings and carry no weight. The semi-floating drive axles must not only transmit the driving torque, but must support the wheels besides, while the floating drive axles receive tortional strains only. The bearings on which the wheels of a floating axle are mounted, are outside of the axle tubes, and easily accessible, while those of the semi-floating axle are between the drive-axles and the tube, and hence are not as accessible. The drive-axles on a floating axle may be removed, permitting the differential to be taken out without disturbing the wheels or their mountings. This is, of course, impossible with a semi-floating axle.

The expense of manufacture of a semi-floating axle, however, is much less than that of the floating type, and as they have given satisfactory service where they have been properly designed, many manufacturers do not deem the greater cost of the floating type warranted. For this reason, in late years, a compromise type has been evolved, known as the three-quarter floating type, which possesses the advantages

COMPLAINS OF REPAIR SHOPS

CHICAGO—Editor Motor Age—I cannot refrain from writing regarding the Motor Age editorial entitled "The Owner's Protection" which appeared in the September 26 issue. Motor Age certainly is getting after an evil which exists and one that I believe does more to harm the motor car business in general than any other single cause.

I have driven a motor car about 12 years, and the bugaboo of my existence is the repair shop. I so dislike to take a car into a shop that I sometimes run a machine in a condition that I know means more wear and necessarily a larger expense later on because I cannot make up my mind to risk my car in any repair shop that I know of.

At the present time if I could find an honest and competent mechanic I could give him 2 or 3 days' work on my car. I am willing to pay the highest price for competent work, but I have been bled so much that I am disgusted with the whole bunch. I cannot help but put them all in the same class, although I think there must be some exceptions, but I do not know who they are. Motor Age has started a good work. Keep it up.—E. E. Bullis.

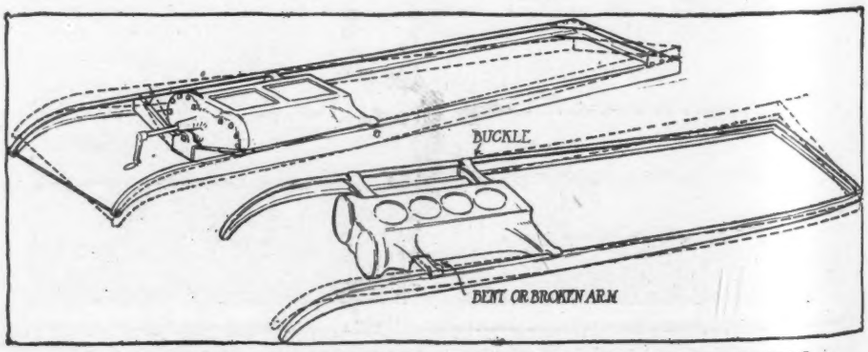


FIG. 2—EFFECT OF TORTION ON DIFFERENT FORMS OF SUSPENSION

Clearing House

Wiring Diagrams for Battery Lighting—Law Prevents Ideal Plan—Missing Cause is Local—Engineer Defends Opinions on Crank Balance

FRIED REMAINS UNCONVINCED

DETROIT, Mich.—Editor Motor Age—Referring to the criticism in Motor Age October 17 on balancing of motors:

The torque unbalance will be the same in both the regular type four-cylinder four-cycle motor and the new type motor suggested in the article. As explosions occur in both cases every half revolution, the torque effect exerted on the crankshaft will be the same, independent of the position of the cylinders in which they occur. The explosion of the gases does not cause any unbalance as the same force which is exerted on the piston and transmitted to the crankshaft is acting against the top of the combustion chamber, and therefore counterbalances the action on the crankshaft.

The unbalance due to the revolving and reciprocating parts is exerted by the centrifugal force of the crankshaft and the accelerating force of the pistons.

All that I referred to in regard to two-cycle motors was that even a two-cycle engine, which is known to be in bad balance, would be in better balance than the one suggested in the article.—Ernest R. Fried, research department, General Motors Co.

of the floating type to a large extent, with the cheapness of the semi-floating type.

This type differs from the semi-floating type in that the wheels are carried on independent bearings, exterior of the axle tubes, hence the drive-axles carry no wheel load. It differs from the floating type, however, in that the axles are secured rigidly to the wheels. While not quite so elaborate as the floating type, three-quarter-floating axles are so little more complicated than the semi-floating type, and their cost being considerably less than the floating type. See Fig. 3.

The following makers of cars in the $4,000 class use the semi-floating type of rear axle: Packard, Premier, Amplex, Morse, Apperson, Pierce-Arrow, Simplex, White, Fiat, Franklin.

AN OVERLAND MISS

Dayton, Ky.—Editor Motor Age—My car is an Overland, model 61, equipped with the Bosch dual system. On cranking, cylinders 1 and 4 fired, while 2 and 3 got no spark. The spark plugs from 2 and 3 work in 1 and 4. The firing order is 1-4-3-2. The insulation of the cables is good and I can find no short anywhere. I have thoroughly cleaned out the breaker-box. All connections, outside of the magneto, are clean and tight. All connections are just the same as the day previous, when the firing was satisfactory. The breaker-box cones open the platinum points about 3-64 inch. Could the trouble be here? No current is delivered to cylinders 2 and 3, and the trouble seems to be in the magneto. Can Motor Age tell me what to do?—Robert L. Johnson.

Your firing order is not right. It should be 1-3-4-2. This may have something to do with the misfiring. If you are sure of your above statements, your trouble is most likely to be found in the distributor. The contacts are in the form of friction brushes, which should be periodically adjusted for wear, and cleaned. The platinum point opening is right. Since current is delivered as it should be to the other two cylinders, the trouble must be with the connections to cylinders 2 and 3. If your distributor is making contact as it should, you should get a spark in the second and third plugs.

Suggests Wiring Plans

Proposed Systems for Lamp Wiring Criticised by Motor Age and Improvements Outlined

BUFFALO, Minn.—Editor Motor Age—I would like to hear from readers of Motor Age on the merits and demerits of the different systems of wiring, as shown in Figs. 4 and 5. I would like Motor Age's opinion also.—P. G. Liederbach.

The first diagram is to be preferred greatly to the second, as there are no grounds to interfere with ignition. Experience has shown that a lighting system, to operate well and permit the ignition to operate as it should, should not be grounded to the frame. There is also economy in complete insulation, and the expense of the second wire is not great. If carried in looms or tubes there will be no danger of short-circuits, and if the insulation on one wire wears off so that it connects with the metal parts of the car, no short-circuit will result, as would were the negative circuit grounded. Your diagrams show three switches, one to control the headlights, one for the side lights, and one for the tail and dashlight. Inasmuch as the taillight is never used without the sidelights, there can be no use in separate circuits for them. There is of course an advantage to parallel wiring of the head and side lamps, as the failure of one will not affect the other, but in the taillight circuit the advantage is in favor of series wiring, as the failure of the taillight will cause the extinguishment of the dashlight, which thus acts as an efficient tell-tale. A short-circuit switch may be connected to it so that the failure of the dashlight will not permanently affect the taillight. In some states, such as Illinois, the law requires that the taillight be controlled only from the rear. This feature need not be sacrificed to these requirements, as a separate switch for the tail and dashlights may be installed at the rear of the car, without control at the dash.

Fig. 6, provides a circuit through the dashlight, and the taillight switch. The switch on the dash is a cut-out for the dashlight, but cannot break the circuit. In Fig. 7, the tail and dashlights are controlled by the sidelight switch.

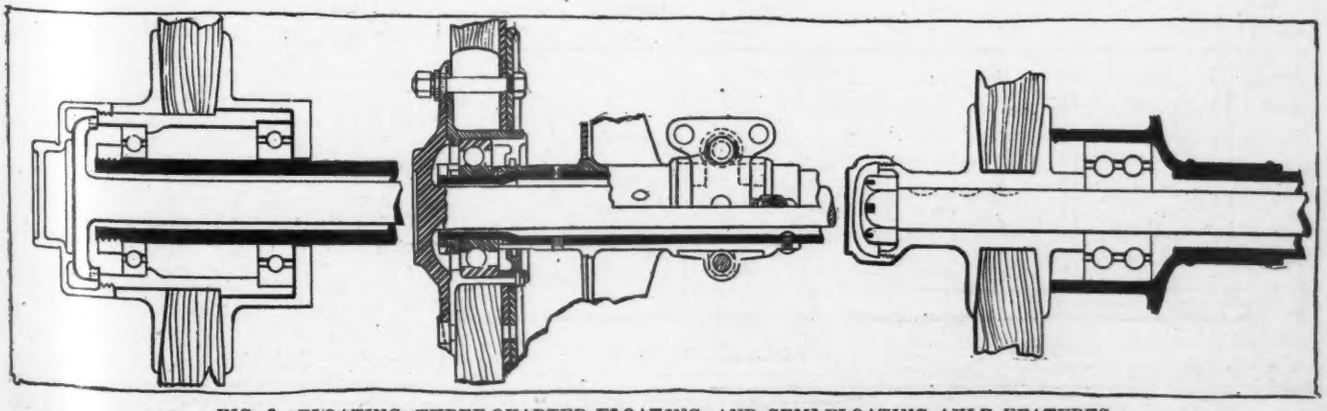


FIG. 3—FLOATING, THREE-QUARTER FLOATING, AND SEMI-FLOATING AXLE FEATURES

Long and Short Stroke

Discussion of Advantages of Popular Engine Type and Elucidation of Valve-Location Status

CALDWELL, Tex.—Editor Motor Age—Will Motor Age kindly explain the advantage of the long-stroke motor over the short stroke?

2—I have heard it said that the long-stroke type delivers more power on low speeds than the short stroke. Is this true and is it true that the long-stroke motor uses less gasoline for the same service?

3—Does Motor Age consider a five-bearing crankshaft more efficient and durable than the three-bearing type? Is there less liability of loose bearings in the five-bearing than in the three? Is it not true that it is usually the connecting rod bearings and not the crankshaft bearings that wear first and therefore the number of crankshaft bearings has nothing to do with this trouble?

4—I own a 1912 Overland, model 61, equipped with a Remy magneto. Will it cause the explosion to take place later in the cylinder by turning the notched nut on the magneto to the right?

5—Explain the advantages claimed for the T-head motor over the L-head. Also the advantages claimed for the use of overhead valves.—A Reader.

1—The advantages of the long-stroke over the short-stroke type of motor are:

Leverage. Given a certain expansion force within the cylinder, the travel of the piston being longer, and transmitted to a longer crank, it operates on a longer lever.

Greater expansion. Given a charge of a certain volume at the time of ignition, it will expand to a greater volume before the opening of the exhaust valve in a long-stroke motor than in a short-stroke one, thereby using more of the energy generated in the expansion of the gases. The theoretical ideal of any heat engine is to use as nearly 100 per cent of the expansion of the charge within the engine as is possible. This accounts for the greater efficiency of the compound steam engine over that of the single-acting type. This type of engine is substantially an elongated-stroke engine, the only difference being

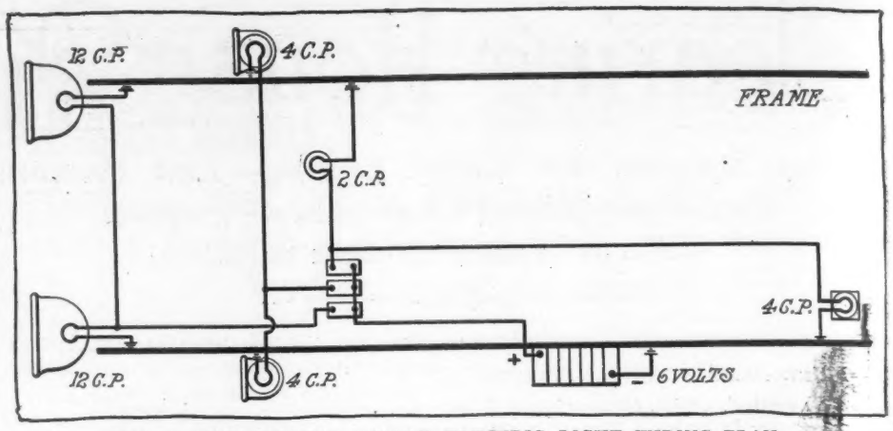


FIG. 4—BAD, THOUGH SIMPLE ELECTRIC LIGHT WIRING PLAN

that the low-pressure portion of the stroke is in a different cylinder from the high-pressure portion. In the long-stroke engine, this super-expansion takes place in a less degree in the same cylinder, so that at the beginning of the stroke the cylinder is a high-pressure cylinder, and at the lower portion of the stroke, it is a low-pressure one.

It has been found in high-speed express locomotive practice that the short-stroke single-expansion engine, while it produces a very low rate of efficiency, and is enormously wasteful, the actual results in high-speed, light-draught work are superior to those of the more efficient type, as only the very cream of the expansive energy is used. This has been found to apply in the same way to gas engines, and for racing work, the short stroke, while less efficient, more wasteful of fuel, and less flexible, has been found to give better results than the long-stroke type. This is the reason why some of the prominent European makers produce stock cars with small bores and long strokes, while their high-speed cars are the reverse. Road racers, on the other hand, generally revert to the preponderance of stroke again, as the short-stroke type is not sufficiently flexible to produce good results, unless built in enormously large power-units.

This was well illustrated in the late Milwaukee road races, where even the high horsepower cars were found to have a preponderance of stroke, while the lighter ones were all designed with long strokes. One make, whose sprint cars, designed for excessive speed for short distances—below 150 miles—have larger bores than strokes; while those designed for the long-distance high-speed grinds, have longer strokes than bores.

Slower crankshaft speed for the same piston speed: It has been found that speed in revolutions per minute is not an accurate standard by which to gauge the power of a motor; but that piston speed in feet per minute, in combination with bore and number of cylinders, is the true measure of an engine's power. It is thus seen that two engines of the same design except as to stroke, will give the same power, disregarding considerations of expansive efficiency, at equal piston speeds. But the long-stroke motor in reaching the same piston speed as the short-stroke type, will revolve much slower. The advantages of slower speed are, of course, well understood. If compared as to crankshaft speed, the long-stroke type will give greater power.

There are other advantages, but the above are among the most important. In considering them, it must be remembered that the comparison is made in the light of efficiency, which is understood to be made up of the factors: horsepower per gallon of gasoline, horsepower per pound of weight, horsepower per cubic foot of space occupied, durability and flexibility. In a racing motor, this term would not have the same meaning, nor would all racing motors come under the same category, as explained above.

2—As explained in the general statement above, all other things being equal, the long-stroke motor does generate its power at lower crankshaft speeds. They are certainly more economical of gasoline than the short stroke, as is proven by the results of certain European makers in their endeavors to find a type of motor that will give the highest efficiency.

3—There are advantages on both sides of the engine journal question. The advantages of the five-bearing type rest on the fact that there is a longer bearing surface, hence more provision for wear, and less distance between bearings, hence less

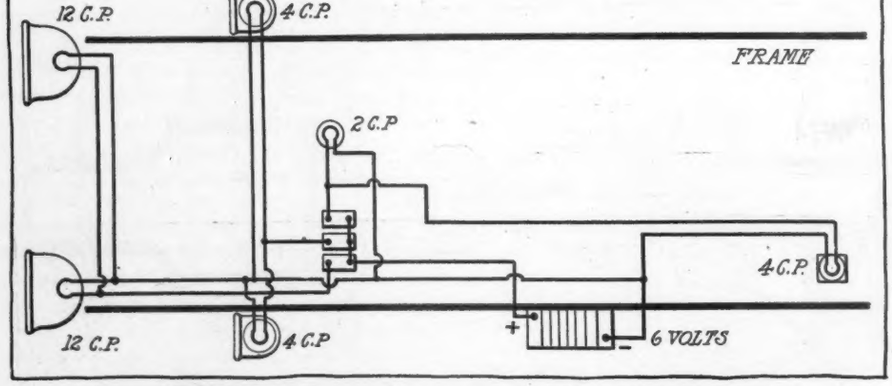


FIG. 5—PLAN THAT IS ELABORATE BUT DOES NOT COMPLY WITH LAW

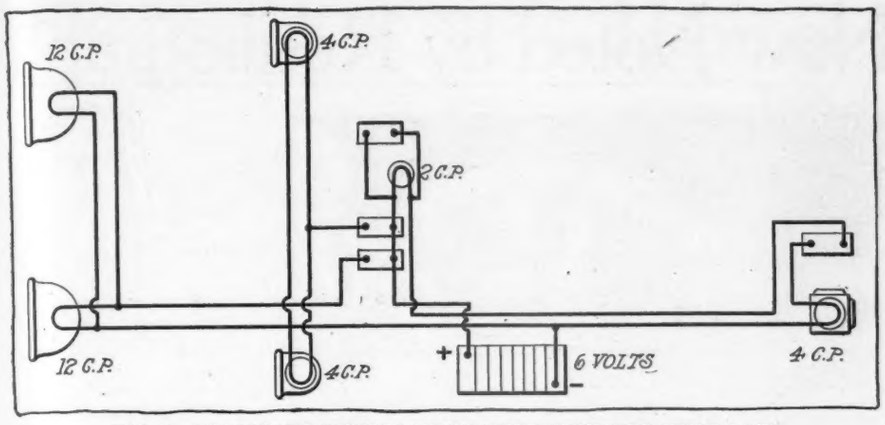


FIG. 6—ELABORATE INSTALLATION THAT COMPLIES WITH LAW

strain on the crankshaft. The advantages of the three-bearing type are that owing to the shorter bearing surface, all other things being equal, it will run freer than the five-bearing type, although the journals will not wear as long.

This is on the same principle as the jeweling of a watch. Friction in these bearings is reduced to the minimum by reducing the bearing surface to a very small area of hard and smooth material. Three-bearing crank bearings should be made of harder metal than five-bearing journals. While the strain on the crankshaft is slightly greater with the fewer bearings, the lining up of the three bearings is easier than the five, and more likely to be right, even in the hands of the most expert assembler or repairman. Thus, while the strain on the crankshaft resulting from piston shock is less severe when five bearings are used, the strain and friction that would result from poor alignment is less likely to be present. The best thing about three-bearing crank-hanging is the saving in expense that this form of construction permits. Your observation in regard to the crank bearings is right.

4—No. This nut adjusts the platinum points on the breaker, the distributor governs the timing. The points should separate about 3-64-inch, on most magnetos, for best results. To alter the degree of advance of retard, the position of the driving gear must be altered.

5—The principal advantage of the T-head motor over the L-head is that the valve-area is larger than with the L-head with the valves side-by-side. Another advantage is that the gas has a direct passage from one side of the motor to the other, and the plugs, situated in the inlet valve pocket, are not subjected to a carbon-laden blast of burned gas at the exhaust.

The disadvantages, which you do not ask for, are that the volume of the valve-pockets is increased, thus providing more space for burned gases to lurk in than with the L-head, and that the engine so constructed requires two camshafts and with their gears, bearings and casings, are heavier, for the same power, and much more expensive to manufacture.

A new type of L-head motor has been evolved in recent years that removes the objection to the small size of the valves necessitated in side-by-side location. This type places the valves one over the other in the valve-pocket, or one in the lower portion of the valve-pocket, and the other in the cylinder head. This eliminates objections to both types, while partaking of the advantages of each.

Valve-in-the-head motors have the advantage over these other types in that no pockets are used in the cylinder, making the combustion chamber more nearly the dome, cone, or parabolic shapes that are variously accepted as ideal. The valves in this location are more accessible than in the other types, although their operation involves more complication than the direct-lift types, usually employed on the straight T-head and L-head types. Valves in the head are usually made smaller than those on opposite sides.

MAKERS OF NOVEL SYSTEMS

Joliet, Ill.—Editor Motor Age—I would like to know the names and addresses of the makers of the Manley hydraulic transmission and the Mead rotary valve engine, both of which were described in Motor Age about 3 years ago, and mention of them has been made later, but never the address.—P. Champoux.

The Manley transmission system is handled exclusively by the Hydraulic Truck Sales Co., 1777 Broadway, New York. The Mead engine is made by the Mead Engine Co., Dayton, O.

Adjutsments on E-M-F

How Carbureter Is Adjusted, What to Do When Differential Sings, and Lack of Advance

INDIANAPOLIS, Ind.—Editor Motor Age—Will Motor Age inform me how to adjust the carbureter on 1910 E-M-F 30.

2—Cannot the singing in the differential be stopped? I have it well lubricated.

3—Is the timing on my car correct? I can advance the magneto either one-fourth or all the way and not change the speed of the motor in the least. Is this proper?—E. E. I.

1—There is but one adjustment on the E-M-F carbureter, as shown in Fig. 1, This is the screw, S, on the lock nut N. This screw controls the air valve. To turn it to the right increases the tension on the springs O and I, so that at the same speed, valve V will not open so wide, giving a richer mixture.

2—If your differential sings when well lubricated, it must be either out of adjustment or there must be a defective gear or pinion. Whether the trouble is in the differential proper or merely in the driving gears may be determined by noting whether the noise occurs only in rounding corners, or at all times. If it is in the differential proper, look for a defective pinion, while if it is in the driving gears, try adjusting the drive-pinion, by means of the nut at the front of the axle housing. If this fails, remove the cover and look for a broken tooth or chewed gears.

3—In a correctly timed car, all other elements being in proper order, each degree of advance will have its effect upon the speed of the motor. If advancing the spark lever beyond one-fourth of its sweep makes no impression on the motor, the chances are strong that its action is limited to that extent, probably by a loose connection. Run over all connections and see that there is no excess of lost motion. A good way is to have someone manipulate the spark lever, observing the effect upon the distributor. Your platinum points may not be breaking properly, breaking the circuit too soon or too late. They should break 3-64-inch.

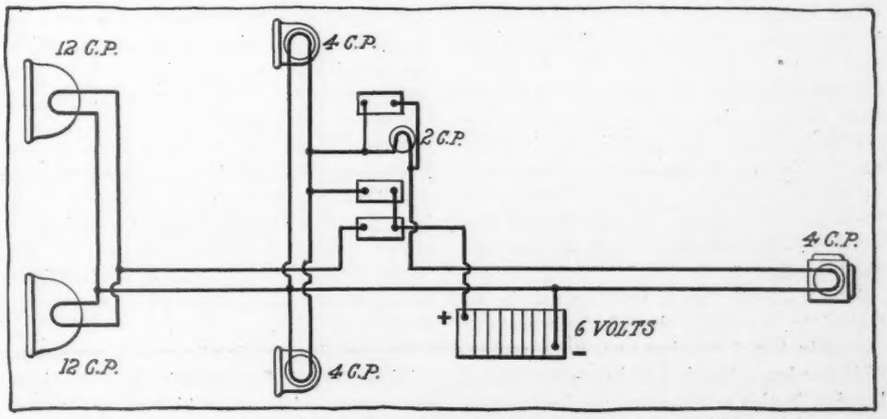


FIG. 7—THE BEST PLAN, WHICH IS SAFEST, BUT ILLEGAL IN ILLINOIS

Road Shocks Now Noted by Resiliograph

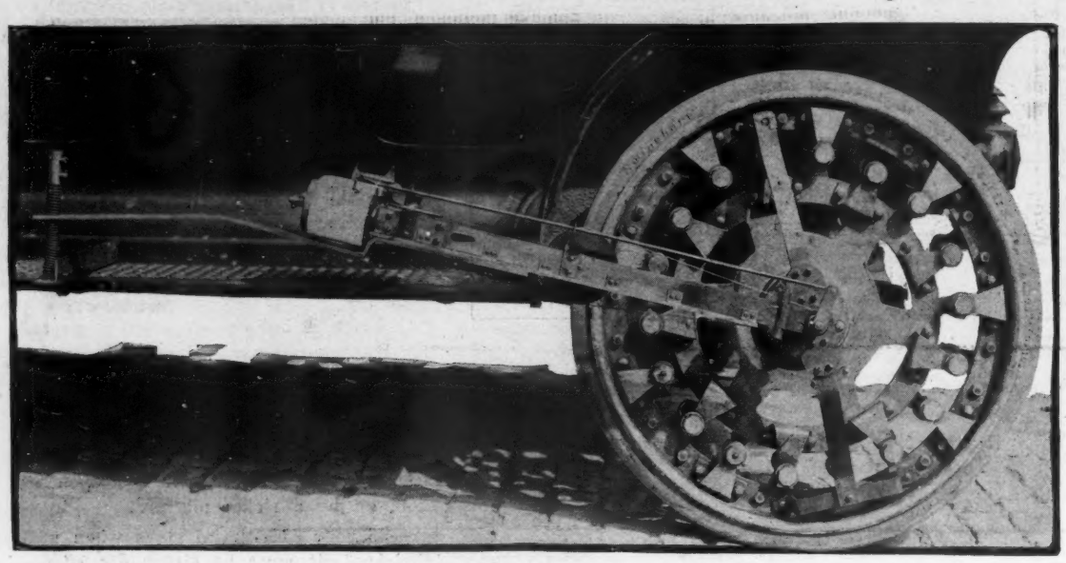


FIG. 1—RESILIOGRAPH AS APPLIED TO SCHERMACK SPRING WHEEL

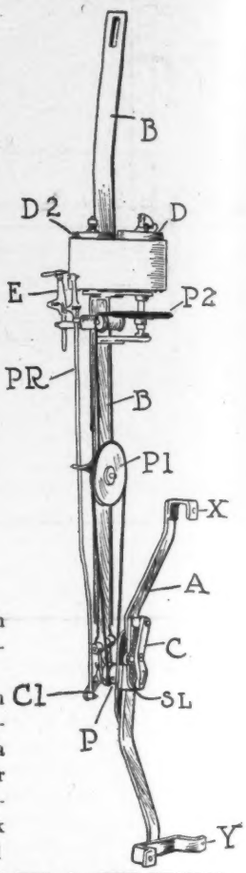


FIG. 2—THE RESILIOGRAPH

BRINGING out a type of spring wheel has been responsible for the construction of a device known as a resiliograph, which has been not only useful for showing that the wheel, equipped with a solid tire, has the proper vibration-absorbing qualities, but also is useful in testing the relative smoothness of various road surfaces over which the motor car, to which it is attached in connection with the spring wheel, travels. This resiliograph is shown in Fig. 1, attached to the wheel, but its details may be better studied in Fig. 2.

The Schermack Wheel Co., Detroit, Mich., recently incorporated, is the concern which has brought out the spring wheel and also the resiliograph. The latter device is described as follows:

Arrangement of Resiliograph

If one of the Schermack wheels were jacked up and revolved without load, the two sections IS and OS, Fig. 5, would have a common center, being normal as in Fig. 4. But when a load is applied ,the center of the inner member drops below the normal center, which is the true center of the outer wheel and which is always fixed. The actual working or live center of the wheel being the center of the inner wheel, it fluctuates continually in relation to the true or dead center of the outer wheel, as already mentioned in an amount in proportion to the weight of the car, or as the roadbed varies. To graphically indicate the resiliency of the wheel, it was only necessary to find a mechanical means for recording the variation in the vertical distance between the centers of the line and dead portions.

Referring to Fig. 2, cross bar A is attached to the outer rim of the wheel, as shown in Fig. 1, bolting to it at X and Y. This bar has a bearing at its center, which bearing is also at the exact or dead center of the wheel. This bar supports the sleeve end of the long bar B, the front end of which is supported on the running board in a spring buffer; see Fig. 1. This bar B carries the two drums D and D^2 on which the paper record is made by means of the pencils shown. The bar A in turning drives the integral pulley P from which passes a belt to P^1. Another belt from the shaft of P^1 conveys the power to pulley P^2, which is on the shaft of the driving drum D^1 and winding the paper onto D^1.

Passing through the sleeve P, a shaft attaches to a short lever SL on the inside of the wheel. To this lever an arm C is pivoted, as shown. This arm is slotted at its lower end to receive a pin which is fixed in the center of the hub. This pin, which is also the exact center of the inner portion of the wheel, represents the live working center of the wheel, and it is continually moving up and down, as explained above. Its movements are transferred to the slotted end of arm C, which in turn transfers them to the other end of the shaft and to arm C^1 on the outside of bar B. Arm C^1 connects with the recording pencil through the rod PR, which pencil moves vertically as the paper passes under it. The pencil E is stationary and is used to trace the dead center of the wheel, which center point becomes a horizontal base line, when drawn out. For every revolution of the wheel the paper moves 1 inch.

Many interesting diagrams showing the fluctuations of the inner portion of the wheel under various road conditions have been taken with the device, appearing as shown in Fig. 6. These indicate that the wheel absorbs jars, shocks and vibrations in much the same way as does the pneumatic tire.

The resiliograph is also useful for determining the relative smoothness of various pavements, since the higher the peaks traced by the pencil, the rougher the roadbed over which the car has traveled.

Tests have been made with the instrument with a light touring car on a level creosote wood block pavement. Wood strips of various thicknesses were nailed to the pavement and passed over at various speeds of the car, readings being taken both when the latter was loaded and unloaded. The results of these readings, which appear in Fig. 6, clearly show at which points the strips were met. In all the diagrams, the upper straight line indicates the normal or dead center of the wheel. In test 1, the lower line is about ⅜ inch below the normal when the car carried only the driver. The blocks used for this test were 1 inch high and were placed 12 feet apart, the car traveling over them at 8 miles an hour. When these blocks were encountered, the inner wheel rose about ¼ inch, then dropped a trifle below its original position, its vibrations becoming less and less until the normal ⅜ inch position was again reached.

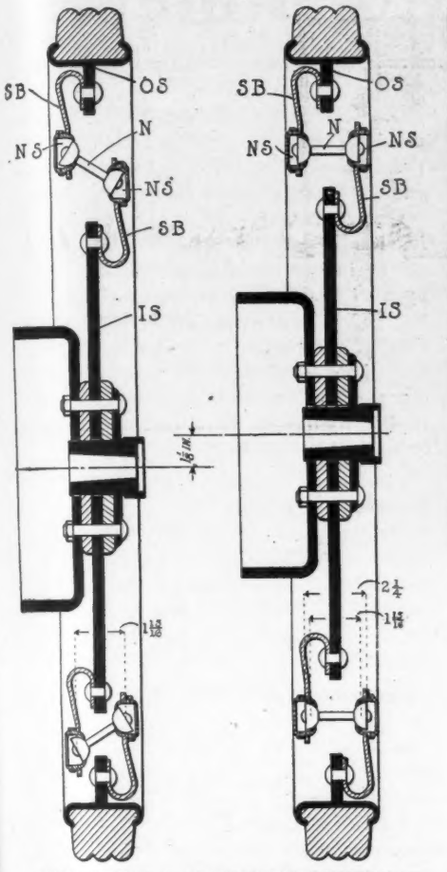
Interesting Tests

Tests under several other conditions are also shown, bringing out the usefulness of the device as a road-tester.

The general design of the Schermack wheel, which is a patented device, is shown sectionally in Figs. 3 and 4. Its appearance when attached to a motor car is clearly shown in Fig. 5.

This new type of spring wheel consists of a hub section or inner wheel IS, and a rim section or outer wheel OS. The latter carries a standard rim on which a solid rubber tire is mounted. The two sections

Schermack a New Type of Spring Wheel



FIGS. 3 AND 4—SECTIONAL VIEWS OF SCHERMACK SPRING WHEEL

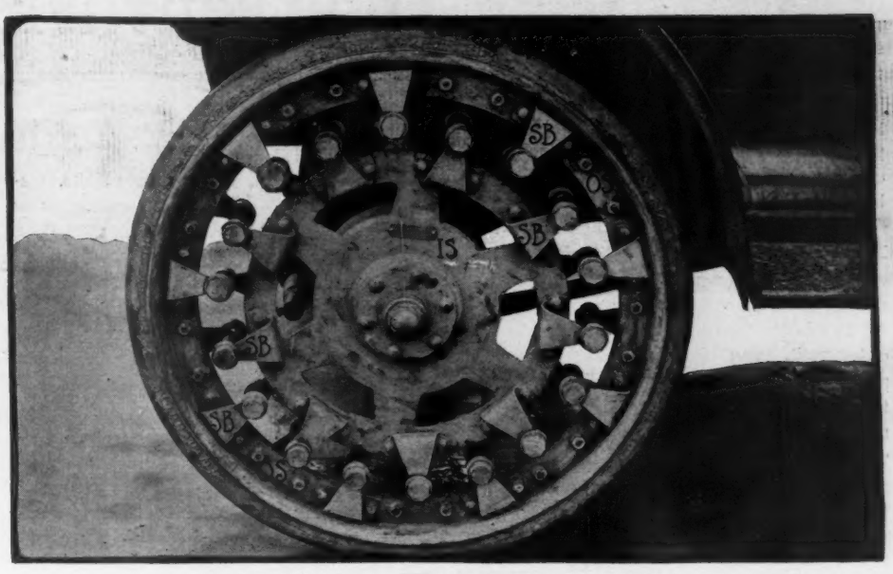


FIG. 5—THE SCHERMACK SPRING WHEEL

are provided circumferentially with aligned projecting flat steel springs or brackets SB, fastened with two bolts each on alternately opposite sides of the two parts IS and OS. These springs are mounted in such a manner that each spring on one rim is under tension and is oppositely aligned with one on the other rim and on the opposite side thereof. These flat radial springs SB, acting horizontally are connected in pairs to the outer and inner rims by laterally arranged steel bars or bolts B, the ends of which are provided with steel balls working in socket connections NS, which are fixed to the flat springs SB. These cross bars, together with their ball and socket connections, take up throughout the circumference of the wheel any load either vertically or sidewide which may be placed upon them. Side loads are more easily carried than vertical loads, since that lateral strength of the wheel is greater than the vertical strength.

Operation of Wheel

Fig. 4 shows the normal condition of the device when no vertical load is applied to the hub. The bar connections N are horizontal when the wheel is in its normal position and when under load, are inclined throughout the circumference of the wheel as shown in Fig. 3. When normally positioned the ends of the bar N lie in vertical

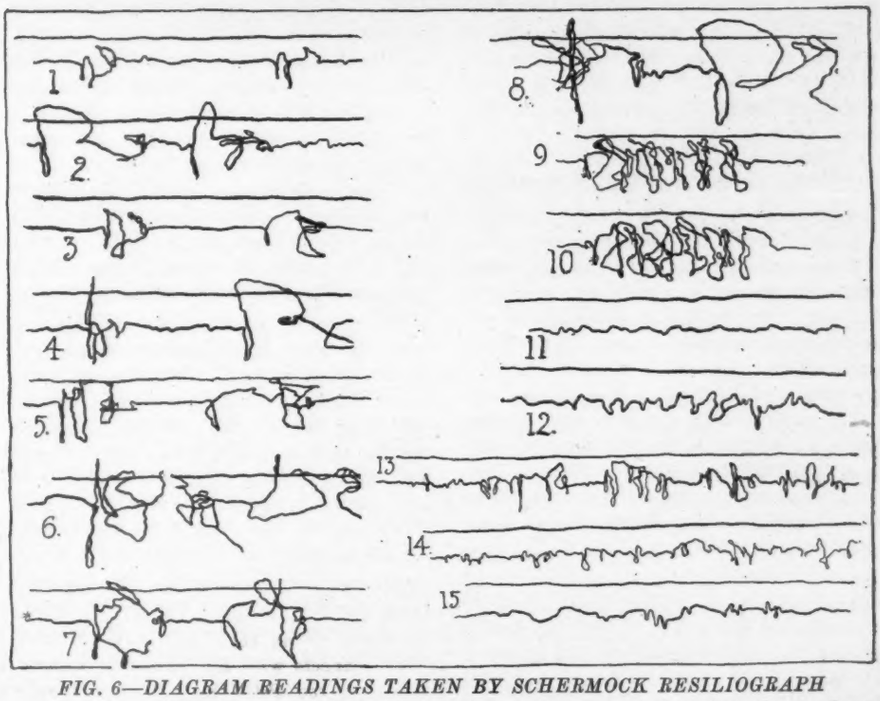


FIG. 6—DIAGRAM READINGS TAKEN BY SCHERMOCK RESILIOGRAPH

Test No. 1—Empty car over three 1-inch blocks 12 feet apart at rate of 8 miles per hour.

Test No. 2—Empty car over three 1-inch blocks 12 feet apart at rate of 15 miles per hour.

Test No. 3—Loaded car over three 1-inch blocks 12 feet apart at rate of 8 miles per hour.

Test No. 4—Loaded car over three 1-inch blocks 12 feet apart at rate of 15 miles per hour.

Test No. 5—Empty car over three 2-inch blocks 12 feet apart at rate of 8 miles per hour.

Test No. 6—Empty car over three 2-inch blocks 12 feet apart at rate of 15 miles per hour.

Test No. 7—Loaded car over three 2-inch blocks 12 feet apart 8 miles per hour.

Test No. 8—Loaded car over three 2-inch blocks 12 feet apart at rate of 15 miles per hour.

Test No. 9—Empty car over eight 1-inch blocks 2 feet apart at rate of 8 miles per hour.

Test No. 10—Loaded car over eight 1-inch blocks 2 feet apart 8 miles per hour.

Test No. 11—Loaded car wood block pavement 15 miles per hour.

Test No. 12—Loaded car asphalt pavement on Second avenue near Warren 15 miles per hour.

Test No. 13—Loaded car over Second avenue railroad crossing 8 miles per hour.

Test No. 14—Loaded car North Grand boulevard 15 miles per hour.

Test No. 15—Loaded car, country roads east of Woodward, 12 to 15 miles per hour.

planes which are 2¼ inches apart, the shortest distance between them being a horizontal line. When under load the bars work up or down depending on their temporary location as referred to the road surface. Under load the horizontal distance between the bar ends is less since any inclined line is greater than the perpendicular distance between the vertical planes and these bar ends. It therefore is evident that any motion of the ends of the bars means a horizontal pull on the flat springs and their consequent bending in.

Not Floating Hub

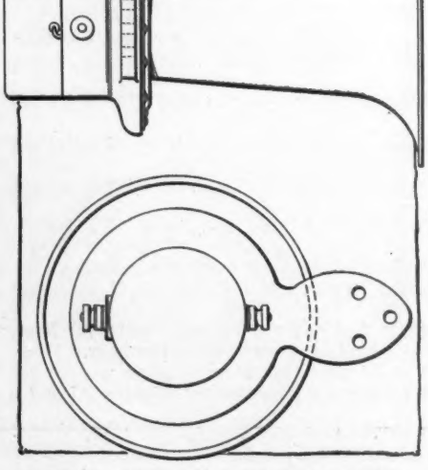
When there is a starting torque load imposed upon the wheel, there is a tendency for the inner portion to revolve within the outer part. But since the flat springs SB are mounted alternately on the two portions of the complete wheel, when the inner part received a twisting load, one bar pulls in one direction while the next one pulls in the opposite direction. This each two pairs of interconnected springs pull against one another equally nullifying the action and causing the outer and inner sections to move together with only a slight give.

The flat springs SB always are under tension, being drawn inward when assembled, the bars NN holding each set of springs closer together than they would be normally.

DENVER SENDS OUT ROAD SCOUTS

Denver, Colo., Oct. 26—A trip to mark out the Denver-Salt Lake City section of the projected Midland transcontinental route was started this week by Charles M. Kittredge, Jr., assistant secretary of the chamber of commerce, and A. L. Westgard, of the American Automobile Association.

The line of this proposed route passes through Golden, Idaho Springs, Kremmling, Berthoud Pass, Sulphur Springs, Wolcott, Glenwood Springs, Rifle and Grand Junction, Colo., and Green River, Cisco and Provo, Utah.



DESIGN FOR ATWATER-KENT HORN

Current Motor Patents

STEWART CHAIN

WALKING TRACTOR—No. 1,041,837—To Ambrose Miks, Ganado, Texas. Filed August 28, 1911, dated October 22, 1912. Walking is mechanically the securing of tractive motion by means of a temporary frictional anchoring of the tractive element, and the rocking of the weight to be carried on an arc of limited extent, with this anchored portion as a center, raising and moving the anchored portion ahead when in motion. It is a superior method of traction to the wheel, in that the frictional contact with the road is a flat surface instead of a theoretical line, as with the wheel. On this principle, the Miks tractor utilizes a set of four vertical legs, carrying pivoted feet as road contacts. These legs at about their center are provided with a circular aperture in which an eccentric is revolved, which porduces an oscillating motion from front to back and upward and forward in a compound reciprocating motion. The upper portions of the arms are slotted, and within them a revolving crank slides, producing longitudinal oscillation.

The action of each leg is a simultaneous lowering and backward movement, followed by an upward and forward movement; the first, bringing the weight of the vehicle on the foot, and moving it forward, and the second raising it clear of the road, and carrying it forward again. The four legs move intermittently, so that the motion is one of continuous propulsion. It is steered by the usual front wheels.

Two-Cycle Counter-bored Motor—No. 1,042,181—To Richard Trotter White, Richmond, Va. Filed February 17, 1912, dated October 22, 1912. A three-port two-cycle type, this motor is of the double-bore type, the cylinder being provided with bores of two diameters, and having a piston of two diameters. It differs from the usual construction of this type, in that the larger and lower bore, which constitutes the pump chamber, is provided with stationary walls inside and outside, in which an annular extension of the piston reciprocates. The inner wall of this pump-chamber is disposed within an annular slot in the piston body, and serves as an additional piston guide, compression being retained through it by a piston ring in the inner overlapping portion of the piston, which bears on its inner surface.

The upper portion of the pump chamber is open to the atmosphere at its upper end. The lower end is provided with slots about its entire circumference which communicate with an annular passage. This passage opens into the inlet port of the engine, tapering down from thence to the carbureter intake. As usual, the inlet port is situated at the bottom of the pistor stroke in the combustion cylinder, and is opposed by the exhaust port. The advantage of this construction is that the intake of the charge is on the up stroke of the piston, and the compression on the down stroke, making the action of this engine similar to that of the four-cycle type, in this respect.

Tire Chain—No. 1,042,166—To John G. Stewart, Vandergrift, Pa. Filed June 24, 1912, dated October 22, 1912. This chain differs from the usual construction in that four circumferential chains are used, two at the bead and two at the tread. These chains are connected by diagonal and cross chains.

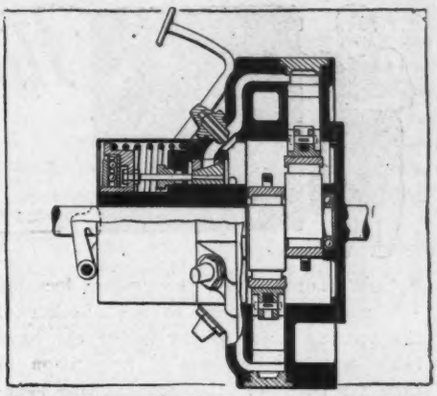
Hydraulic Transmission—No. 1,041,132—To Charles David McClintock, Oakland, Calif., assignor of 58-100 to Saul Cornfield, Oakland, Calif. Filed January 15, 1912, dated October 15, 1912. To provide a transmission means, presumably for motor cars, between a power source and a driving means, this invention consists of a housing containing a central fluid space, fluid cylinders, and an outer fluid space, with valves therefor, which is secured to the driving shaft, within which is disposed a driven shaft which carries pistons within the cylinders. These pistons are actuated in the cylinder by fluid pressure, their action being transmitted to the driven shaft by a cam- and pull-ring mechanism. The fluid is admitted to the cylinder by automatic check-valves. The rotation of the cylinders about the driven shaft, causes the reciprocation of the cylinders. In so reciprocating, they pump the fluid from the central portion to the outer portion, whence it finds its way back to the central portion, through a spring retained pressure valve. With no load, this valve is held closed by the spring, so that no fluid is pumped, the pistons remaining stationary in the cylinders, and hence turning the driven shaft with them, at substantially driving-shaft speed. Upon a load being applied, however, the pressure of the fluid is increased, which causes the valve to overcome the resistance of the spring, and open. Its opening is proportionate to the pressure of the fluid, and hence to the load, thus allowing a proportionate leakage of fluid. The greater the leakage, the less the pressure, so that at the severest loads, the valve is so far open, permitting such a volume of leakage from the outer fluid space to the inner,

Inventions of the Week

that the pistons have a considerable amount of action, and the driven shaft is hence rotated at decreased speed in proportion to the speed of the driving-shaft. To bring this condition about when the load is not so severe, a pedal is fitted which upon being pressed, causes a cam to bear upon the pressure spring, relieving its pressure, and permitting abnormal leakage. This gives low speed, and the extreme stroke of the pedal relieves the spring pressure totally, unseating the valve, and relieving the pressure entirely, so that the casing revolves about the driven shaft, and the pistons have full action, without transmitting any motion to the driven shaft. No reversing means is specified.

Lubricating System—No. 1,041,735—To Alanson P. Brush, Flint, Mich. Filed February 15, 1911, dated October 22, 1912. This patent relates to a system of splash lubrication, wherein circulation is automatically maintained in the engine base, without the use of mechanical appliances. This system is applied to multi-cylinder motor car engines, having an inclosed crankcase and a crankshaft. The crankcase is provided with oil splash pans, in which the connecting rods splash oil to lubricate the cylinders and wrist pins. The crank bearings are lubricated by means of tubes which scoop the oil from the troughs, and conduct it to the bearings. The main journals are lubricated by troughs, which catch a portion of the oil as it runs down the inside of the crankcase. The rest of this return flow is directed to the next trough ahead of the one from which it was splashed by sloping channels. Return leads conduct the overflow from the front trough to the rear.

Vacuum Tire—No. 1,042,065—To Willard Jay Woodcock, Brooklyn, N. Y. Filed January 3, 1912, dated October 22, 1912. This tire relies on air pressure for its source of resiliency, but, unlike the pneumatic type, the pressure is that of the atmosphere, outside the tire, the flexible tube, which forms the tire, inclosing a vacuum. This vacuum chamber is in the form of a narrow and deep annular slot, completely inclosed, to exclude the entrance of air. The side walls and tread are heavy, and prevented from coming together on their inner surfaces by spaced members, secured thereto. The deformation of the tire in passing over obstructions is resisted by the external pressure of the atmosphere, when the side walls of the tire are spread, enlarging the vacuum space.



McCLINTOCK HYDRAULIC TRANSMISSION

Nantucket Rowing Over Motor Cars

NANTUCKET, Mass., Oct. 19—The row over the use of a motor fire engine on the island of Nantucket, off the Massachusetts coast, which would furnish a basis for a comic opera plot, has at last reached the courts through August L. B. Fisher, a liveryman, bringing suit against the town of Nantucket, asking that an injunction be issued restraining the board of fire wardens from enlarging the fire engine house on Quince street.

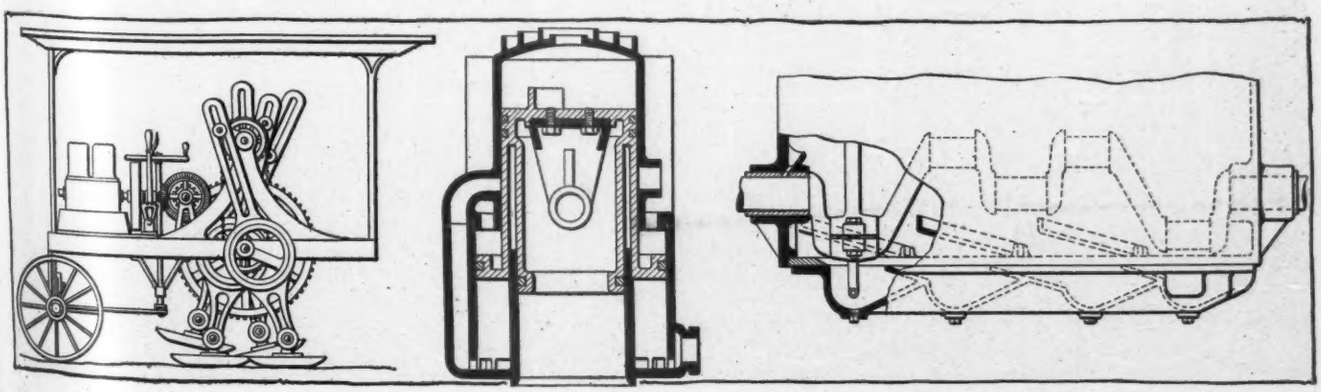
This suit is the outcome of antagonism against the presence of the new $6,000 motor fire engine on the island, which is protected from invasion by motor cars by a specially enacted law. Fisher alleges that the board of fire wardens is to infringe on his rights by the enlargement of the chemical house, taking therefor land which has been in public use for a quarter of a century. Mr. Fisher's stable is at the rear of the engine house and he has a right of way over the town's land.

The action of the fire wardens, he claims, is in direct defiance of the vote of the town, which a few weeks ago refused to appropriate money either for enlarging the building or men to operate the motor chemical, and now the liverymen are desirous that the apparatus be sold.

Fisher's suit is the first legal step taken to bring the matter to a head, however, service having been made on Henry Riddell, chairman of the board of selectmen; George Howard Winslow, town treasurer; Arthur A. Norcross and Maurice W. Boyer, fire wardens, and Harrison G. Gardner, superintendent of the fire alarm service. The notice of a temporary injunction against the town was issued in Boston by Judge Pierce, and he has set a date for the hearing, the writ being returnable the first Monday in December.

That the motor chemical is a white elephant is admitted now by those who have had anything to do with it, for to operate it on the island would place those who handled it amenable before the courts for violating the state law. The liverymen believe that to let it be used would be an opening wedge for the use of other motor vehicles on the island, and that would put them out of business. So it is believed now that if a reasonable offer were made for the machine it would be disposed of.

Summer residents, however, would like to see it put into commission, for they realize that it would be a much more efficient safeguard than the antiquated fire apparatus now in use, and their property interests on the island are very large. So everyone is awaiting with interest the action of Judge Pierce when the case comes before him in Boston.



MIKS TRACTOR, WHITE TWO-CYCLE MOTOR AND BRUSH LUBRICATION SYSTEM

The Motorist's Kindergarden

EDITOR'S NOTE—Motor Age is publishing in this department a series of non-technical explanations of the various parts of motor cars for the benefit of the reader who knows nothing about them. The subjects will be dealt with in the most elementary manner, so that the series when completed will form a simple elucidation of the car. The first article appeared October 10, 1912.

How the Engine Works

NOW that the use, the general location and the relations to one another of the various parts of the motor car have been explained, we are in a position to take up each of the mechanisms separately and find out how they are made to do the work required of them.

Let us take up the motor first, the part which produces the power to run the car. In a former issue the motor or engine was likened to a shotgun or rifle in which a mixture of gasoline and air was exploded instead of gunpowder and in which the piston took the place of the bullet. The piston in the motor cylinder is driven downward in the cylinder for the same reason that the bullet is sent out of the gun; that is, by the pressure caused by the endeavor of the explosive to expand when it is heated or burned. Gunpowder takes fire spontaneously from a sudden jar, as when the percussion cap is exploded by the gun hammer, and in burning forms a gas. Now when air or any other gas is heated it expands, and if it is confined in a space that will not allow it to expand, in striving to do so it creates a pressure against all sides of the chamber in which it is confined and when the pressure gets great enough, something must give. The bullet or the load of shot is the easiest to move and it starts out of the barrel.

The same thing occurs in the cylinder of a gas engine; the piston is in the top of the cylinder with a load or charge of inflammable mixture of gasoline vapor and air above it. This charge then is fired by an electric spark in the spark plug which sticks through the cylinder wall into this inflammable mixture. When a spark occurs in the spark plug, the mixture starts to burn, the gas tries to expand as it gets hot and the pressure increases till something gives way. The piston gives way soonest and slides down toward the other end of the cylinder, the motion being used to turn the crankshaft as explained before. It goes down with such force that the flywheel on the end of the crankshaft cannot stop immediately and consequently the piston is sent up and down in the cylinder several times before the force of the initial explosion is spent. By that time, another charge of gasoline vapor and air has been drawn into the cylinder and fired and the motor gets another lease of life.

The combustion of the charge is so rapid that it is usually called an explosion and can happen only after the mixture of gasoline vapor and air has been drawn into the cylinder and prepared so that it will take fire quickly and burn completely, to make the highest possible pressure in the shortest possible time. The preparation consists in simply squeezing it up into the head of the cylinder so that it is compressed somewhat. Also arrangements have to be made to get the burned gases out of the cylinder to make room for the next charge of fresh mixture.

There are then five things that must occur in the engine cylinder in succession before it can repeat; that is, there are four things the engine must do after one explosion before it is ready to explode again. As soon as the explosion occurs, that is, when the gas is ignited, the gas must expand, forcing the piston down, then the burned dead gas must be gotten rid of, forced out of the cylinder, then a fresh charge must be gotten into the combustion chamber—the part of the cylinder between the top of the cylinder and the top of the piston—and then this charge must be compressed. When all this is done the engine is ready for the next spark which gives the succeeding explosion.

This series of events forms the cycle of the gas or gasoline engine. A cycle in general is any series of events occurring in succession which go to make up a complete operation. When the piston of a gas engine moves from one end of the cylinder to the other, this movement is called a stroke. Each time it moves from the top to the bottom or from the bottom to the top it completes one stroke. Each stroke corresponds to a half revolution of the crankshaft and two strokes, from the bottom to the top and back to the bottom again, or vice versa, means one revolution of the crankshaft.

Some engines take more strokes to complete their cycle than do others. Some are designed to explode and get ready for the next explosion in two strokes, that is, while the piston is going down and up again. Such engines are called two-cycle engines. Others, and by far the greatest number in motor car practice, require four strokes

FIG. 4—STROKES OF A FOUR-CYCLE ENGINE AND WHAT HAPPENS IN THE CYLINDER AT EACH STROKE

between explosions, and they are called four-cycle engines.

The names of the five events that compose the cycle tell their nature. When the mixture is fired and the explosion occurs it is called ignition or explosion, when the gases expand and force the piston down it is called expansion or the power stroke, when the burned gas is driven out it is called the exhaust, and when the fresh inflammable charge is taken into the cylinder it is called admission, inlet or suction. The last event is when the charge is compressed into the head of the cylinder ready for the next spark, and that is called compression.

In a four-cycle engine the five events are accomplished in the following way: starting with the ignition of the compressed charge of inflammable gasoline and air mixture with the piston at the top of its stroke, the piston is forced down on the power or expansion stroke by the expansion of the burning gas. When it gets down to the bottom the piston starts back on the exhaust stroke, driving the burned, dead gas out of the cylinder. Upon arrival at the top of its stroke, it starts down again, sucking into the cylinder a charge of fresh gas—this is the inlet suction, or admission stroke; on the last upward stroke two things occur, first the piston squeezes the charge up into a small space in the top of the cylinder; this is called the compression stroke; just as the piston reaches the top of the cylinder on its compression stroke, a spark occurs in the spark plug which is sticking into the compressed gas and the latter is exploded, completing the cycle. The two down strokes are the power and inlet strokes respectively and the two upstrokes are the exhaust and compression strokes respectively.

So far, nothing has been said about how the fresh air gets into the cylinder or how the burned gas, usually called the exhaust gas or simply exhaust, gets out. This is done through two gates in the cylinder, called valves, one that lets the fresh gas in and the other that lets the fresh gas out. The first is called the inlet valve and the other the exhaust valve. These gates or valves must be opened and closed at just the right moments or the gas cannot be let in and out and compressed when necessary.

When the gas is exploded, both valves must be closed so that the force of the explosion shall not expend itself on the outside air but shall all go to sending the piston downward. Then on the exhaust stroke, the exhaust valve must open so that the exhaust gas will pass out of the cylinder; on the inlet or suction stroke the exhaust valve is closed and the inlet valve open so that the piston actually sucks the fresh mixture into the cylinder; while compression is going on, both valves are closed, otherwise the gas would be forced out of them. How these gates of the motor, the valves; are made and worked will be explained in the next issue.

Many Concerns to Exhibit in Chicago Commercial Show

Space Already Assigned to Sixty-Five Truck Concerns

NEW YORK, Oct. 28—Sixty-five commercial motor vehicle manufacturing companies secured exhibition space at the Chicago show in the October drawing. Allotments made at the drawing took all of the ground floor space in the Coliseum, Coliseum annex and the First Regiment Armory with the exception of five of the least desirable spaces comprising about 2,500 square feet in all. Three of these spaces have since been taken and there are in addition half a dozen applicants on the waiting list.

This indicates plainly that next February's exhibition will be considerably larger than last winter's, and in all probability it will be necessary to utilize the basement under the annex for the first time at the truck show. Between now and the opening of the show there are sure to be a score of belated applications which can be taken care of in no other way.

Last winter the show opened with eighty-two exhibitors of complete vehicles and chassis, but at the October drawing the allotments were smaller and only three or four companies went into the armory, which, however, filled up later.

There will be no motorcycle section this winter and the center of the second floor of the annex occupied by it last winter will be filled with motor car parts and accessories, so that this part of the show will be more comprehensive than heretofore. Most of the members of the Motor and Accessories Manufacturers will continue their displays from the first to the second week, and there will be many sundries displayed by unaffiliated concerns.

In the accompanying list of complete vehicle makers already allotted space are ten that are new exhibitors in Chicago. These are the Brown Commercial Car Co., Buffalo Electric Vehicle Co., Four-Wheel Drive Auto Co., Gramm-Bernstein Co., Krebs Commercial Car Co., Lippard-Stewart Motor Car Co., D. F. Poyer & Co., Standard Motor Truck Co., Transit Motor Truck Co. and Universal Motor Truck Co.

Of these, only the Lippard-Stewart and Universal showed in New York last winter. The Brown company is the new concern organized by Will H. Brown, formerly of the Mais truck, which was exhibited in the Chicago show in 1910. The Gramm-Bernstein is the new enterprise of B. A. Gramm, whose Gramm Motor Truck Co. was sold to the Willys-Overland Co.

The half dozen makers now on the waiting list are: Mogul Motor Truck Co., Chicago; Mercury Mfg. Co., Chicago; H. J. Koehler S. G. Co., New York; Ideal Auto Co., Ft. Wayne, Ind.; Kentucky Wagon Mfg. Co., Louisville, Ky.; Ware Motor Vehicle Co., St. Paul, Minn. Of these, the Mogul and Mercury were exhibited before at Chicago, and the Koehler was shown at the Palace show in New York last winter.

It will be noticeable next February that the large companies have extended their lines and are offering a wider range of capacities than formerly and in some cases added electric vehicles to their gas truck lines or gas trucks to their electric lines.

The armory takes on an added importance this winter as a result of luck in the drawing, whereby several of the most prominent manufacturers got allotments in that building. Notable among these are the Packard, White, General Vehicle, Baker and Alden Sampson companies. The list of exhibitors now stands:

COLISEUM

Adams Brothers Co., Findlay, O.
American Locomotive Co., New York.
Autocar Company, Ardmore, Pa.
Buffalo Elec. Veh. Co., Buffalo, N. Y.
Buick Motor Co., Flint, Mich.
Clark Delivery Car Co., Grand Crossing, Ill.
Dayton Auto Truck Co., Dayton, O.
Federal Motor Truck Co., Detroit, Mich.
Flint Motor Wagon Dept. Durant Dort Carriage Co., Flint, Mich.
Garford Co., Elyria, O.
General Motors Truck Co., Pontiac, Mich.
Gramm Motor Truck Co., Lima, O.
Hupp Motor Car Co., Detroit, Mich.
International Motor Co., New York.
Thomas B. Jeffery Co., Kenosha, Wis.
Kelly Motor Truck Co., Springfield, O.
Kissel Motor Car Co., Hartford, Wis.
Knox Automobile Co., Springfield, Mass.
Krebs Com. Car Co., Clyde, O.
Locomobile Co. of America, Bridgeport, Conn.
W. H. McIntyre Co., Auburn, Ind.
Old Reliable Motor Truck Co., formerly Henry Lee Power Co., Chicago.
Peerless Motor Car Co., Cleveland, O.
Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Pope Mfg. Co., Hartford, Conn.
Reliance Motor T. Co., Owosso, Mich.
Reo Motor Car Co., Lansing, Mich.
Selden Motor Vehicle Co., Rochester, N. Y.
Speedwell Motor Car Co., Dayton, O.
Sternberg Mfg. Co., Milwaukee, Wis.
Studebaker Corporation, Detroit, Mich.
United States M. Truck, Cincinnati, O.
Velie Motor Vehicle Co., Moline, Ill.
Walker Vehicle Co., Chicago.
Waverley Co., Indianapolis, Ind.

COLISEUM ANNEX

Bowling Green Motor Car Co., Bowling Green, O.
Chase Motor Truck Co., Syracuse, N. Y.
Dart Mfg. Co., Waterloo, Ia.
Lippard-Stewart Motor Car Co., Buffalo, N. Y.
M. & P. Elec. Veh. Co., Detroit, Mich.
Service Motor Car Co., Wabash, Ind.
Standard Motor Truck Co., Detroit, Mich.
Transit Motor Truck Co., Inc., Louisville, Ky.
Universal Motor Truck Co., Detroit, Mich.

FIRST REGIMENT ARMORY

Avery Co., Peoria, Ill.
Baker Motor Vehicle Co., Cleveland, O.
Bessemer Motor Truck Co., Grove City, Pa.
Brown Commercial Car Co., Peru, Ind.
Chicago Pneumatic Tool Co., Chicago.
Commerce Motor Car Co., Detroit, Mich.
Four-Wheel Drive Auto. Co., Clintonville, Wis.
General Vehicle Co., L. I. City, N. Y.
Gramm-Bernstein Co., Lima, O.
Harwood-Barley Mfg. Co., Marion, Ind.
International Harvester Co., Chicago.
Lauth-Juergens Motor Car Co., Fremont, O.
National Motor Truck Co., Bay City, Mich.
Packard Motor Car Co., Detroit, Mich.
D. F. Power & Co., Menominee, Mich.
Alden Sampson Mfg. Co., Detroit, Mich.
Sanford Motor Truck Co., Syracuse, N. Y.
A. O. Smith Co., Milwaukee, Wis.
White Co., Cleveland, O.

Six a New Model in Oakland's 1913 Line

No Startling Mechanical Changes Noted for Next Year

IN adding a six-cylinder car to its extensive line, the Oakland Motor Car Co. joins the rank and file of manufacturers who might almost be credited with combining to make 1913 a year for sixes, so many having brought them out for the first time this season. Refinements and minor changes in body design and mechanical construction are to be found in all the Oakland four-cylinder types. However, the two features which distinguish them particularly are the V-shaped radiator design on several of the models, and the aluminum step construction, which takes the place of running boards.

Three Four-Cylinder Types

There are three four-cylinder types, in addition to the six, known as models 35, 40 and 42, the first of which has a 3½ by 5-inch motor, while the other two are equipped with a power plant having a cylinder bore of 4⅛ inches and a stroke of 4¾ inches. These cylinder dimensions also apply to the 6-60, as the new six is designated. The same general constructional features are incorporated throughout, although minor differences are to be noted. By having one general design, it is possible to standardize a great many parts, and the Oakland concern has not lost sight of this.

The four-cylinder model 35 is the low-priced car of the line. The wheelbase of this model is 112 inches. Next to this model in price comes model 40, which is practically the same as last year's model 40, although the wheelbase is 114 inches, 2 inches greater than that of the latter. Model 42, with a wheelbase of 116 inches may be had in all body types, and it appears as a very pleasing and clean-cut type.

OAKLAND'S NEW RADIATOR

The new six-cylinder model is the leader. The wheelbase is 130 inches, which gives plenty of length for a roomy seven-passenger body or for a rangy roadster design.

Model 42 and the 6-60, are practically alike in all constructional details, although not all of their respective parts are of the same dimensions. All features of the two motors are alike, the only difference being that the six motor has its magneto, water pump and camshaft driven by silent Coventry chains, whereas, these parts of the four-cylinder motor, which is of the same bore and stroke, are driven by gears. The motor of the model 40 is identical with that of the 42, while the smaller engine of model 35 carries out all the design details of the others on a smaller scale.

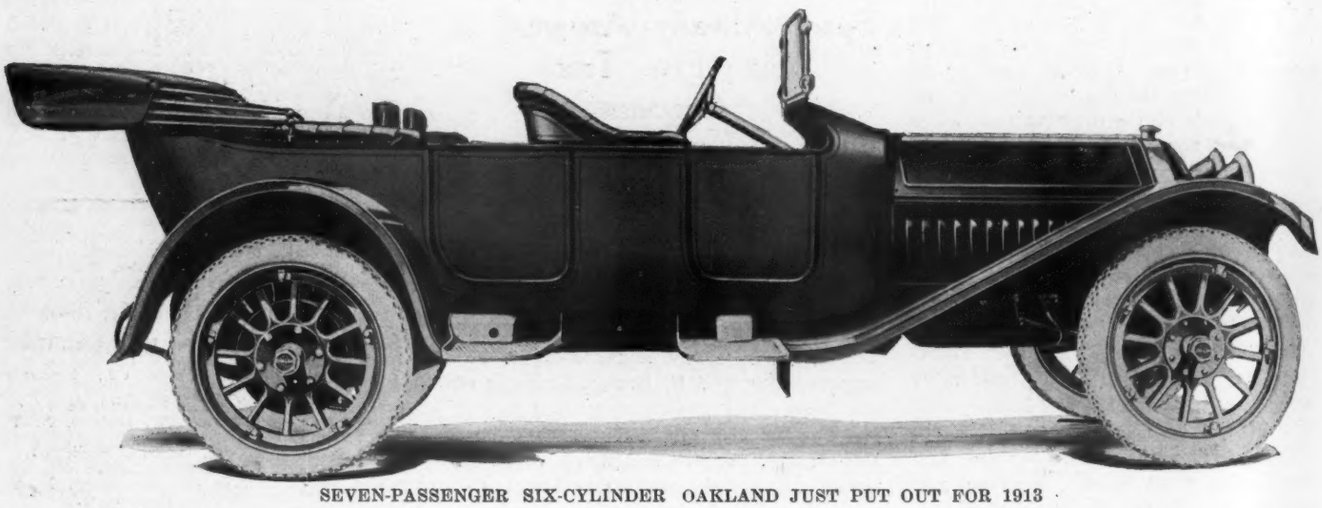
Body Styles on Various Models Changed and Refined Greatly

Oakland Earmarks in Evidence

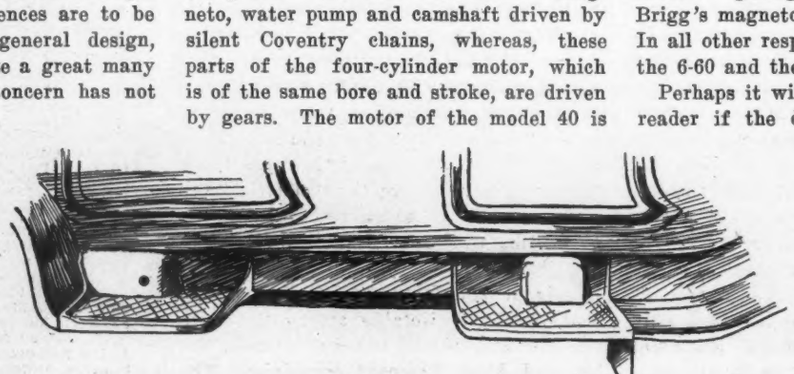
It may be said that the Oakland earmarks are in evidence in the chassis construction of all four models, although an inspection reveals the fact that they may be classed in two groups. Models 35 and 40 differ from the other two in that the rear axles are semi-floating instead of floating; they have a single drop frame in place of a double drop construction; their radiators are flat and not V-shaped; they carry 15-gallon gasoline tanks under the front seats and feed the fuel to their motors by gravity, whereas the other models have force feed and have their gasoline tanks slung under the rear of the frames, and their wheelbases are, of course, less. The two larger models also are provided with Deaco combination lighting and ignition systems, while model 35 has Remy ignition and storage battery electric lighting, and model 40 carries a Brigg's magneto and acetylene gas lamps. In all other respects they are the same as the 6-60 and the 42.

Perhaps it will be less confusing to the reader if the description of the line is confined to the 6-60 and to the model 42. The six has a rated horsepower of 40.9 and the model 42, 27.25, according to the S. A. E. formula, but these figures are much below the actual power output due to the long stroke of 4¾ inches.

As in previous Oakland



SEVEN-PASSENGER SIX-CYLINDER OAKLAND JUST PUT OUT FOR 1913



ALUMINUM STEP CONSTRUCTION USED BY OAKLAND

Three Four-Cylinder Cars Also Offered

V-Shape Radiator Design on Several Models of Oakland

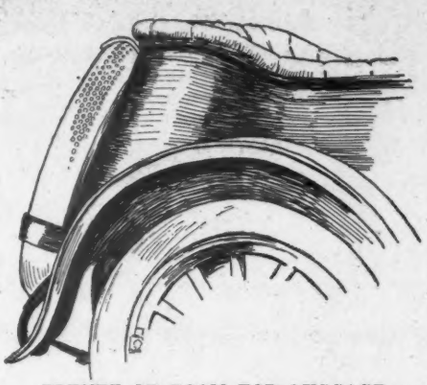
New Aluminum Step Takes Place of the Former Running Boards

design, the six motor is in combination with a unit power plant, the gearbox being bolted directly to the flywheel housing. The cylinders are of L-head type, and are in pairs. Waterjackets are integral, all valves are on the left side and the valve stems and springs are inclosed by cover plates. These features are conventional, and in general, it may be said that there is nothing unusual about any of the Oakland power plants. They are in accord with present-day American practice.

Some Motor Details

Connecting-rods are H-section drop forgings, the wrist pin bearings being bushed with bronze. Each wrist pin is fixed to one of the piston bosses by means of a set screw. At the crank ends the connecting rods are provided with die-cast babbit metal bearings, while shims are used for adjustment. The pistons have flat heads and they are provided with three rings each. The crankshaft is forged, the flywheel web being integral with the rest of the shaft. The flywheel has a diameter of 16 inches. Four main bearings support the crankshaft, these bearings fastening in the upper half of the crank-case, permitting of the easy removal of the lower half.

Valves are provided with double hexnut adjustments while the lifters are of the roller type operating in guides located in the upper half of the crank-case. The camshaft is of ample size and is also provided with four supporting bearings. Its cams are forged integrally with it.

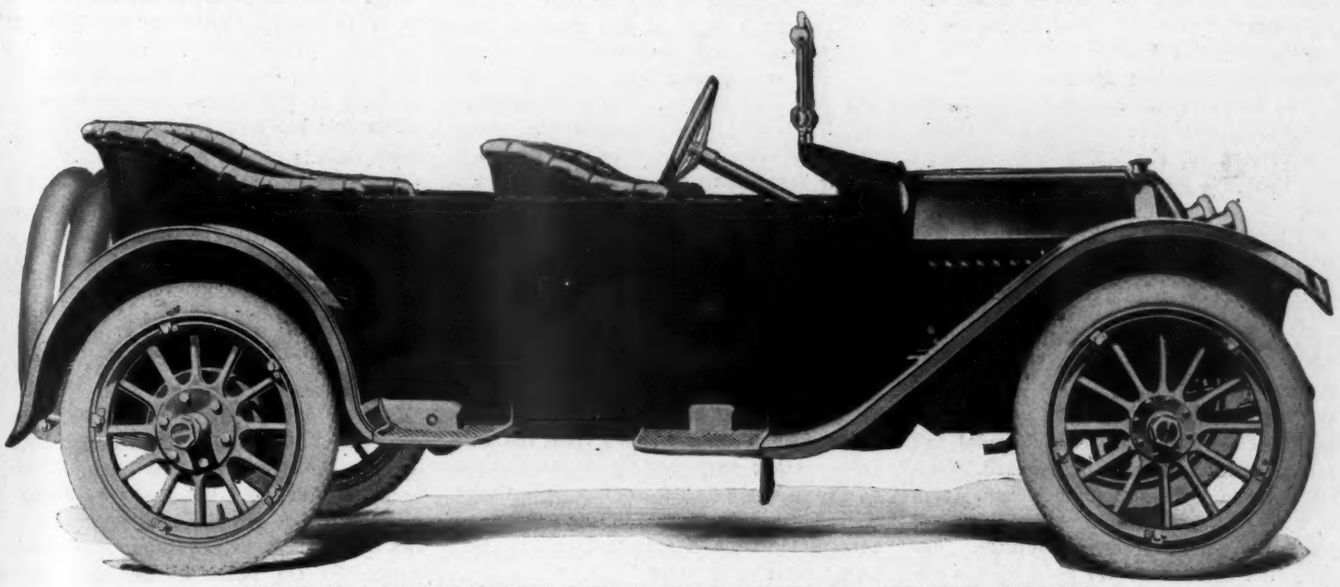


PLENTY OF ROOM FOR LUGGAGE

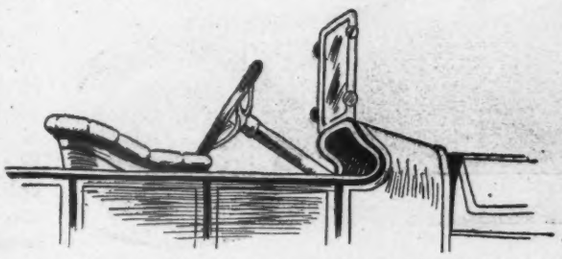
Lubrication is by splash and circulation is kept up in the usual way by a plunger pump, cam-operated from the camshaft through gears. Below each connecting rod there is an oil trough into which the end of the rod dips, splashing the oil to the bearings and into the cylinders. The lubricant eventually runs into a sump in the lower part of the crankcase, from which point it is returned to the oil troughs and to the chains at the front of the motor by the oil pump. Only as much oil as required is delivered to the feeders, which in turn convey it to the troughs, the delivery being determined by adjustment of a stroke of the pump. A series of grooves within the crankcase insures delivery of oil to the various points and finally to the reservoir, which is an integral part of the crankcase and which has a capacity of 1½ gallon. The stroke of the pump may be varied from without the crankcase.

Cooling Arrangement

Water circulation is provided by a centrifugal water pump located forward of the magneto and driven by a silent chain. The cooling fan, which is a three-blade propeller type, is driven by a belt from a pulley on the pump shaft. The radiator is one of the distinctive features of Oaklands for this season, in that it is V-shaped and is fitted with a German silver top, also V-shaped. The radiator is of square-tube type.



MODEL 42, A FIVE-PASSENGER FOUR-CYLINDER MODEL IN OAKLAND'S 1913 LINE

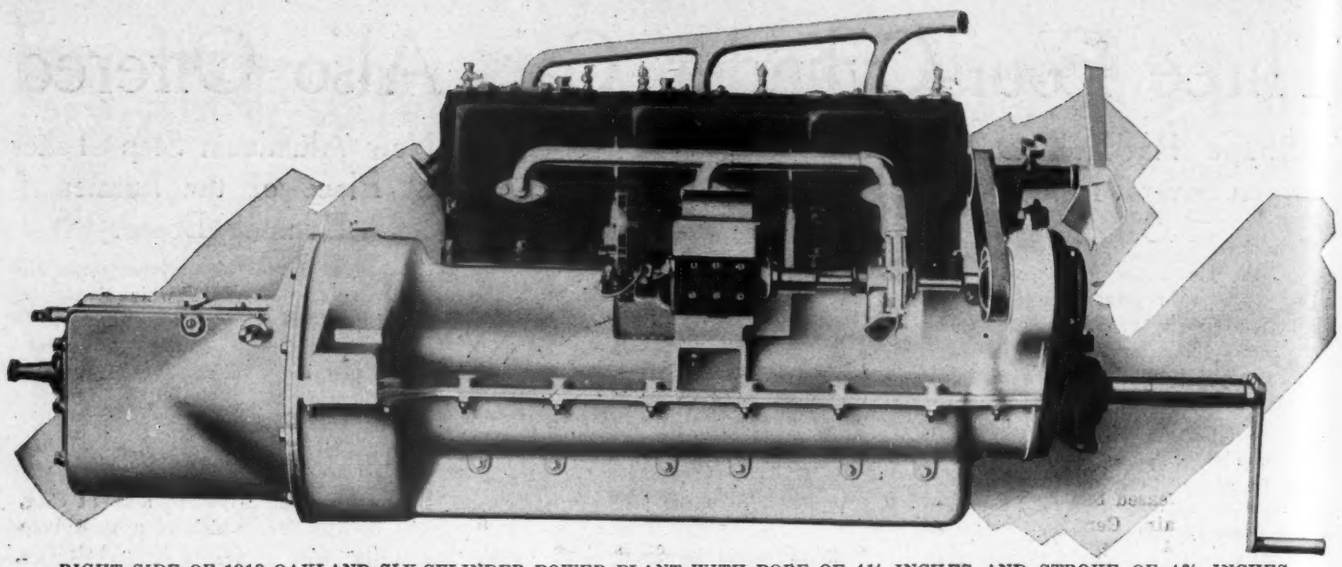


NEW STYLE DASH ON 1913 OAKLAND

A 1½-inch Stromberg carbureter is provided, whereas on the four-cylinder model of similar construction a Schebler, model 0, is used. The gasoline tank, which has a capacity of 21 gallons, is located at the rear of the car under the frame and hence pressure feed of the fuel is required. The tank is provided with a gauge which gives the gasoline level.

One feature of the six motor which marks a step forward in motor design is the use of silent chain for the driving of the magneto, pump and camshaft, as already mentioned. The silent chains are of Coventry make and they are fully inclosed in an oil-tight case, the top portion of which is removable so the chains and their sprockets may be easily inspected.

The motor and gearset are suspended



RIGHT SIDE OF 1913 OAKLAND SIX-CYLINDER POWER PLANT WITH BORE OF 4⅛ INCHES AND STROKE OF 4¾ INCHES

at three points, the front support being in a cross-frame member and in the form of a trunion which is an integral part of the gear case. The two rear supports are provided through the use of arms, cast as a part of the upper half of the crankcase and fly-wheel housing.

Deaco Lighting and Ignition

The Deaco ignition system is used. The generator, which in addition to furnishing current for the ignition, provides for the lights, is located about half-way forward on the right side of the motor. It is held on a crankcase bracket and driven by a flexible coupling from the pump shaft. The generator furnishes current primarily for ignition purposes and the surplus is transferred to a storage battery from which it is carried to the lights.

The drive and control are on the right, the gears being shifted by a lever within the car. Service brake, clutch pedal and other control apparatus is standard. Steering is through a worm-and-nut gear. There is a drag link which is provided with ball joints and shock absorbing springs. The drag link has a diameter of ⅞ inch while the cross connection back of the axle is 1 inch in diameter. The front axle which is of I-beam type is fitted with integral lugs which act as steering stops.

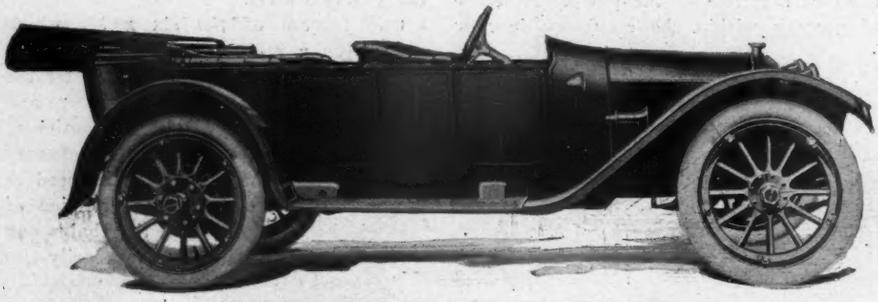
The propeller shaft is not inclosed, the drive being taken care of through substantial rear springs and through a torque arm running parallel to the propeller shaft from a cross member of the frame at the gearbox to the rear axle housing. The front end of the torque arm is provided with a spring buffer. Two universal joints are used in the drive shaft, one of these at the gearbox and the other at the rear axle. The clutch is of cone type.

The rear axle is of the floating type, which means that the entire load is carried by the housing and none of it by the rear axle shafts. The only function of the latter is to transmit the power from the differential to the rear wheels.

The front springs are half-elliptic, 2¼ inches wide and 41 inches long. The rear three-quarter elliptic springs, which are mounted outside of the frame, have the same width, but they are 53¾ inches in length. Great flexibility and easy riding qualities are claimed for these springs by the maker. A new feature of the spring suspension is that the rear springs are underslung, that is, the bottom section of these springs are suspended from the axle tubes rather than resting on the plates on top of the axle housing, as in ordinary construction. All the spring clips are constructed from ⅝ inch material.

Low Center of Gravity

The frame has a double drop, that is, it is lowered just to the rear of the power plant and raised again at the rear so that it will clear the rear axle. By so constructing the frame a low center of gravity and reduction of side sway to a minimum is claimed. The low drop construction makes possible the elimination of side aprons, spring pockets, step hangers, running boards, and so on.



MODEL 35 OAKLAND WITH LOW-HUNG BODY

Oakland bodies are exceedingly attractive, and, in addition to the V-shaped radiator feature, that of replacing the running boards by four aluminum steps, one for access to each door of the car, is an innovation. Bodies of any type may be had. Upholstery is very heavy. The designers have looked carefully into the comfort of passengers, and roominess in all models has been attained.

Body Details

The use of ventilators in the sides of the hoods of some of the models has been returned to. All the bodies are flush-sided, door handles and hinges being concealed. The low angle to the cowl dash on all Oakland body designs lends a finishing touch. In the roadsters the seat is made wide enough to accommodate three.

All models are provided with demountable rims and Goodyear tires. The trimmings are of nickel. The electric headlights, side lights and tail lamp, Klaxon horn, complete tool kit, tire repair outfit, pump and jack are standard equipment on the six and its four-cylinder counterpart, model 42. On model 40 the lamp equipment consists of acetylene gas head lights, oil side and tail lights, as well as robe rail, horn, gas tank and full tool equipment. Model 35 has electric lighting system and carries other accessories similar to model 40. On models 42 and 6-60 an air-starting device is included in the equipment.

Close-Coupled Six

Worthy of special mention is the four-passenger, close-coupled body which is mounted on the six-cylinder chassis. This model, which, however, is only one of twelve different body types constituting the Oakland 1913 offering, has a particularly rakish appearance, and the bringing forward of the rear seat makes for extreme comfort, it is claimed. The rear of the body slopes just the reverse of the ordinary design, sloping inward toward the top of the seat, instead of curving inward at the bottom. Consequently, the longest overall length is at the frame. The

spare tire is carried at the rear. The six-cylinder, seven-passenger model is characterized the Greyhound.

REPORT ON FRENCH IMPORTS

Paris, Oct. 19—Out of a total import of motor cars into France during the first 8 months of 1912 valued at $1,765,860, the United States sent cars to the value of $578,340. The total shows an increase, for during the same period of 1911 France imported for $1,692,420 worth of foreign cars of which $338,580 came from America. It will thus be seen that the American increase is high. The total French exports for the period January 1—August 31, 1912, shows an increase of $6,066,060 compared with the corresponding period of 1911. The increased business was done with Great Britain, Germany, Belgium, Switzerland, Spain, United States, Brazil, Argentine and Algeria. The following are the official figures of French exports for the first 8 months of 1911 and 1912.

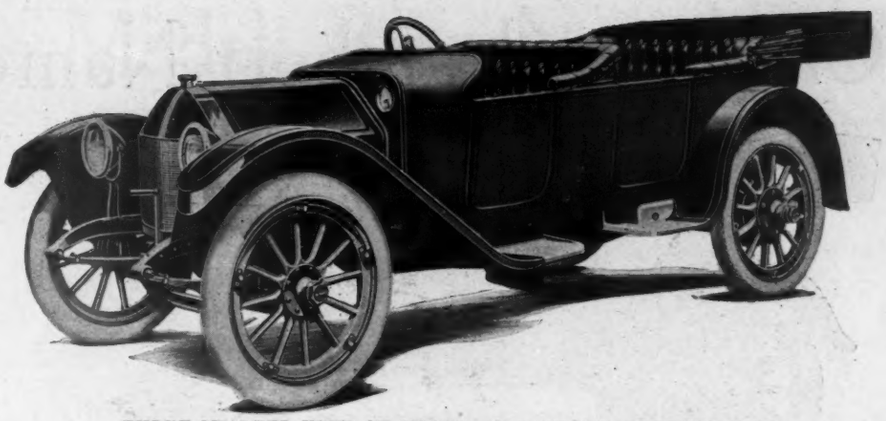
	1911	1912
England	$ 7,301,040	$ 7,883,400
Belgium	3,777,480	6,041,880
Algeria	1,404,540	2,228,040
Germany	1,748,160	2,203,380
Argentine	1,184,700	1,873,200
Brazil	801,240	1,213,920
Switzerland	656,400	683,220
Spain	360,000	656,580
United States	368,460	653,880
Italy	548,180	328,860
Russia	382,560	236,100
Austria-Hungary	355,140	148,680
Turkey	255,600	96,000
Other countries	2,060,940	3,024,360
	$21,205,440	$27,271,500

THE CHAUFFEUSE IN THE MAKING

London, Eng., Oct. 18—A school has recently been established in the city of London which is known as the Ladies' School of Motoring, and as the name implies, it is for the instruction of women in the mechanism, management and maintenance of modern motor cars.

This new school is promoted in the interests of women motorists, and for the educational welfare of those intending to adopt motoring as a profession.

Today women are actively engaged as sales women, demonstrators, clerks, travelers, etc., as in other fields, while there already are a few companion-chauffeuses and secretary-chauffeuses in private employment, and it is thought that motor cars and the many branches of work connected therewith offer many lucrative positions for women.



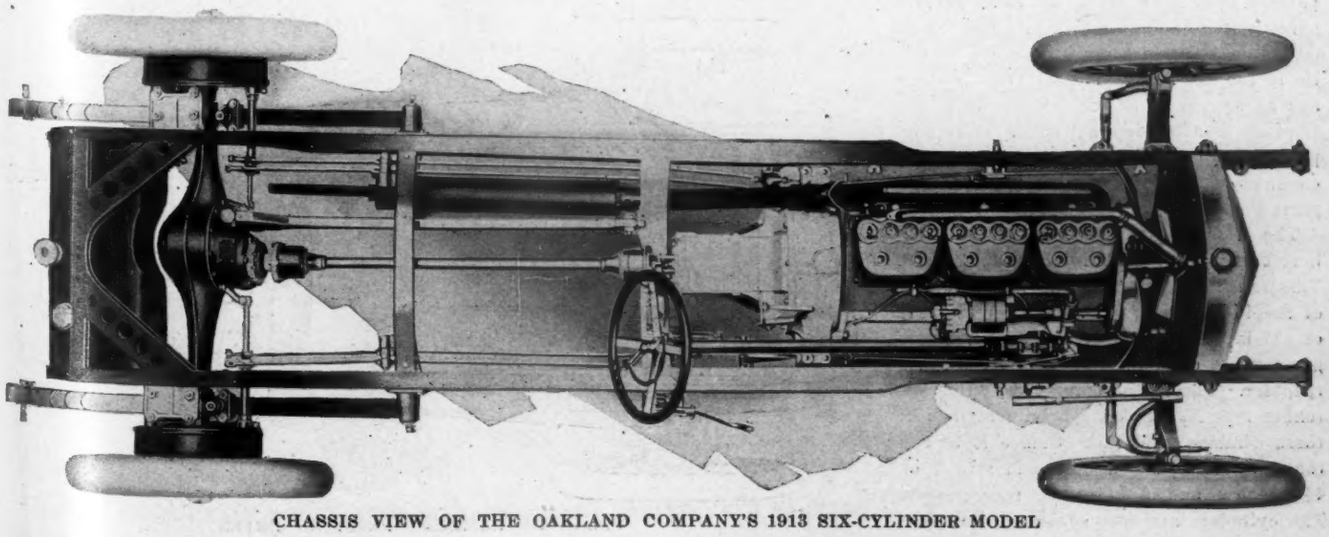
THREE-QUARTER VIEW OF MODEL 42 OAKLAND TOURING CAR

Two courses are given. The junior extends over a period of three months. This course primarily is intended for women wishing to take up motoring as a pleasure. The course of instruction includes lectures and demonstrations, and private driving study lessons are arranged to suit the convenience of the pupil. These embrace the construction, operation and management of the engine and all its component parts, and their relation to each other. Engines, magnetos, carbureters, systems of cooling and lubrication, chain, bevel-gear and worm drives, clutches, brakes and gear boxes, wiring, coils, tires, vulcanizing, body work, etc. Driving and mechanism lessons are given throughout the course, each pupil receiving individual instruction. The fee for the shorter of the two courses is $50.

The full course, extending over a period of 6 months, is intended for those who wish to qualify for the various positions open to women in the motoring profession, and is similar to the junior course with the distinction that more practical mechanism and driving lessons are given and fuller instruction given in running, repairs, etc. This course also includes lectures on the design of bodies, upholstering, trimming, color schemes, etc., and arrangements are made for those who wish to qualify for secretary-chauffeuse, saleswomen, demonstrators, etc., to be taught bookkeeping, business methods, typewriting and shorthand as applied to the motor car industry. The Ladies' School of Motoring proficiency certificate is awarded to each pupil taking the full course and satisfactorily passing the examinations. The fee for this course is $100.

ONE MORE FOR DETROIT

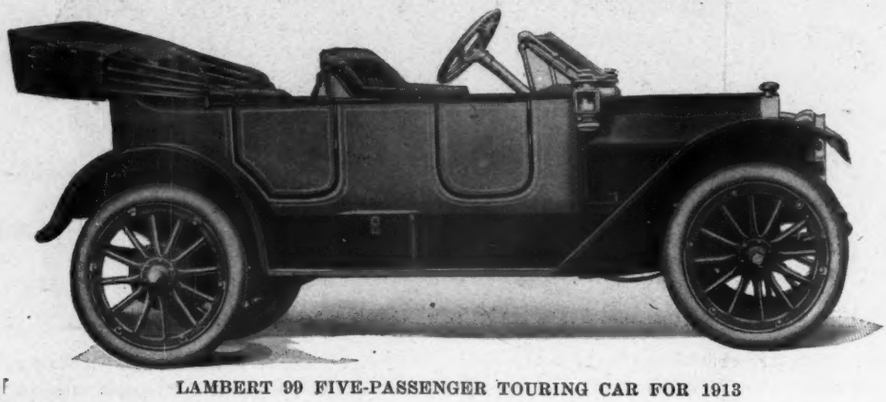
Detroit, Mich., Oct. 28—If the plans which are now under way culminate, a $200,000 body-building concern will be located in this city. H. D. W. Mackaye, secretary to the president of the Keeton Motor Co., is negotiating with certain interests in the east regarding the contemplated venture. He stated today that the eastern capital was willing to go ahead with it, the matter at present resting entirely with himself. The idea is to manufacture all-steel stamped bodies, for which there is a large demand, because of the light weight, simplicity and economy which they are said to possess. J. W. Mackaye is also interested in the new concern, and will become its president, H. G. W. Mackaye taking the position of treasurer and general manager of the new concern, according to plans outlined.



CHASSIS VIEW OF THE OAKLAND COMPANY'S 1913 SIX-CYLINDER MODEL

Changing Lambert Name to Buckeye

Hoosier Car Has Three New Motors for Three 1913 Chassis Models



LAMBERT 99 FIVE-PASSENGER TOURING CAR FOR 1913

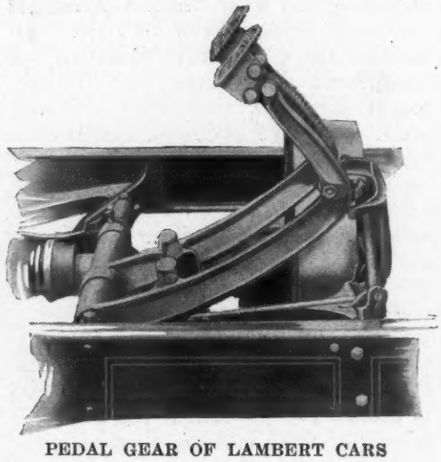
THE product of the Buckeye Mfg. Co., which was formerly known as the Lambert car, appears for the 1913 season in three chassis models, only one of which bears the name Lambert, the other two being known as Buckeye cars. As in the past the distinctive feature of the products of this factory is the Lambert patented friction drive upon which the Lambert reputation has been built, and which does away with the spur-gear speed-changing set and the clutch employed in ordinary transmissions.

Instead of the five chassis models with the single 4⅛ by 4¼ motor with five different wheelbases employed this year, the 1913 line comprises three models with three different sizes of motor and different wheelbases. Aside from the motors and general chassis dimensions, these three models follow the same construction and have the same features throughout. These include, beside the friction transmission, single chain drive, elliptic rear springs, semi-elliptic front springs, semi-floating rear axle on Hess bearings and four-cylinder Rutenber motor suspended at three points.

Former Features Retained

All three cars have minor mechanical improvements, but there is no radical departure from past years, the same general construction being retained. The chief mechanical changes, aside from the motor, lie in the use of the Titanic front springs and an alteration in the lubrication of the friction transmission by which it is supplied with grease from only three grease cups instead of the larger number employed previously.

The leader of the product of the Lambert factory for 1913 is the Lambert 99. This is a medium-priced car with a motor of the 40-horsepower class and a wheelbase of 117 inches. It appears as a five-passenger touring car and two-passenger torpedo roadster. The motor employed is the Rutenber type X, which has been described in these columns in detail. Suffice it to say that the motor has a bore and stroke of 4⅛ inches and 5¼ inches, respectively. The cylinders are cast separately and are cooled by a centrifugal water pump located on the magneto shaft. The motor is of the L-head type with both intake and exhaust valves on the left side. All valve stems are enclosed from dirt and grit but are easily accessible by removing a single thumb nut. The lubrication is by means of a combination splash in the crankcase and a gear-driven pump. Five bearings are used on the crankshaft, the connecting rods are drop forged, and the pistons are longer than is usual in motors of this size.



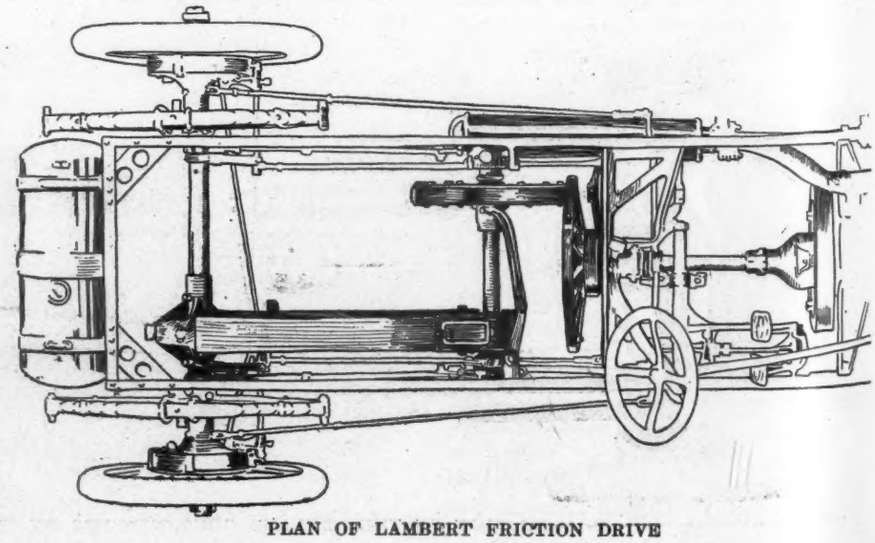
PEDAL GEAR OF LAMBERT CARS

The parts are accessible and interchangeable. The radiator is of the vertical tubular type. A Schebler carbureter and Remy magneto are the motor accessories.

Lambert friction transmission is illustrated on these pages. The drive is carried by an extension of the crankshaft direct to a large friction disk placed amidships. This disk is placed transversely of the frame and has an aluminum face. It is free to slide forward and back. Parallel with this disk is a transverse jackshaft, upon which is mounted a fiber-faced friction wheel. This friction wheel can be moved along the jackshaft at the same time transmitting motion to it as the jackshaft carries a long key or spline passing through the hub of the friction wheel. When the friction disk is brought into contact with the friction wheel, the former transmits its motion to the latter, the relative speeds depending on how far out toward the circumference of the disk the friction wheel is in contact. Between the friction disk and the motor there is interposed a universal joint of special design.

Transmitting the Power

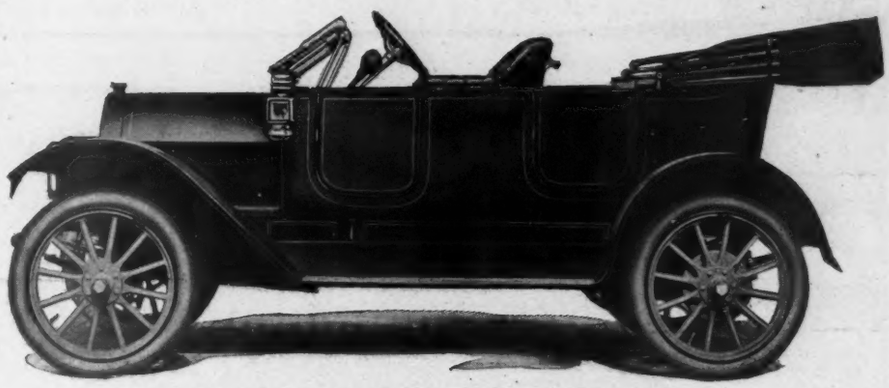
From the jackshaft power is transmitted to the rear axle through a Renolds silent chain over a sprocket on the rear axle. The chain is enclosed in a sheet-metal housing, provided with an inspection plate at its forward end. The large friction disk is operated by a foot pedal and the friction is applied by pressure on the pedal which forces the extension disk rearward, bringing it into contact with the jackshaft friction wheel. When the pedal is released a spring throws the disk back from the friction wheel so that it is not in contact with the latter. The friction contact is made by a fork lever having a



PLAN OF LAMBERT FRICTION DRIVE

Two of Three Models Bear New Name

Friction Drive Is Continued Feature—Name Lambert Graces Big Car Only



BUCKEYE MODEL 10, LITTLE BROTHER OF LAMBERT CAR

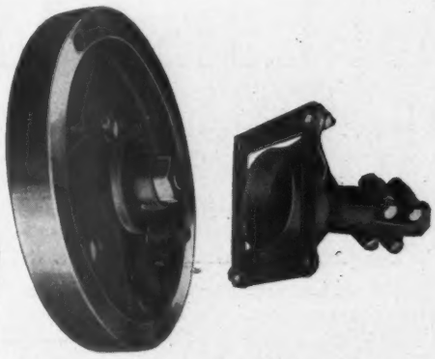
screw takeup or adjustment which is very accessible. A special cross bearing 7¾ inches in length is provided just back of the friction disk. This bearing, which is enclosed in a grease-tight case, eliminates the thrust strains on the jackshaft.

Speed Change Arrangement

The speed change arrangement is operated by a short lever at the right of the driver's seat and is connected with the friction wheel through a knuckle lever movement. By movement of this control lever the friction wheel is moved along the face of the friction disk and can maintain any position from the outside to the center so that any speed can be obtained. When the friction wheel is past the center of the friction disk the reverse is obtained. The jackshaft upon which the friction wheel is mounted is supported upon roller bearings contained in universal hangers attached to the side members of the frame. These are so designed as to permit the bearings to maintain their proper alignment regardless of distortions of the frame. The hangers are adjustable and the jackshaft can be removed from beneath the car by loosening two studs. Radius rods are provided on either side which extend from the jackshaft hangers to the rear axle.

The frame is a comparatively rigid structure mounted on semi-elliptic springs in front and elliptic rear springs. The front axle is of I-beam construction with plain bearing steering knuckles and adjustable ball bearings on the front wheel spindles. The brakes are internal and external, 2 inches in width and 12 inches in diameter, lined with raybestos. The foot pedals are so arranged that when the friction pedal is engaged, which corresponds to the clutch on the ordinary car, the brake is automatically relieved and when the friction pedal is thrown out the brake is automatically thrown on the rear hub. The tires are 34 by 3½ inches in size.

The Buckeye 40 chassis is much the same in every respect except that the



LAMBERT FLEXIBLE FLYWHEEL COUPLING

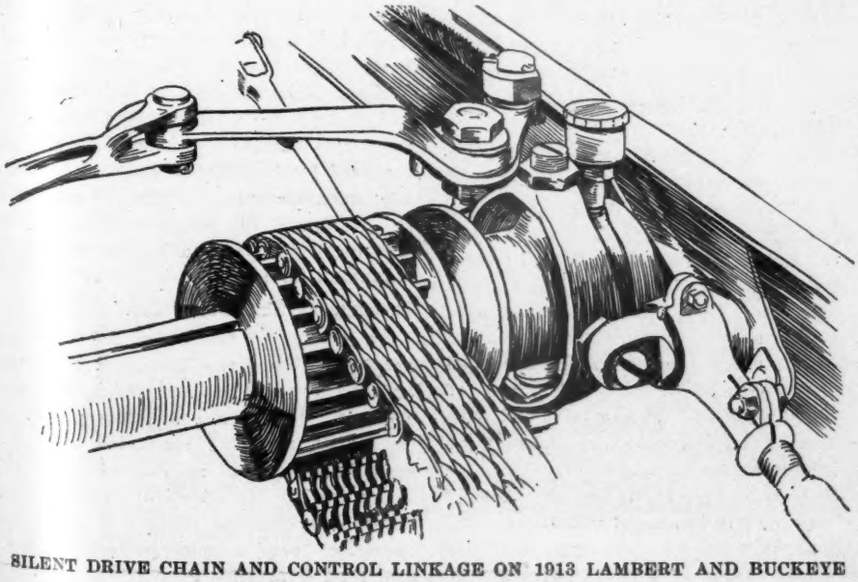
Rutenber motor has its cylinders as a mono-block casting. These are 3¾ inches by 5¼ inches bore and stroke. The wheelbase is 112 inches and the tires are 32 inches by 3½ inches in size.

The smallest model is the Buckeye 10. This is much like the Buckeye 40 except in motor dimensions, which are 3¾ inches by 4¼ inches bore and stroke. The wheelbase is 106 inches and the tires are 30 inches by 3½ inches in size. A Bosch magneto is employed on this model. Both appear as five-passenger touring cars.

Body Designs

The body designs are of the straight-line type and are made of metal upon a substantial wooden frame. The upholstering is deep, with high artistic rolls; door latches are inside the body.

The equipment includes gas and oil lamps, black enameled and nickel plated, demountable rims, coat rail, aluminum floorboard in front, nickel trimming and wheel puller, in addition to the regular outfit of tools and tire repairs. Acetylene or gasoline starter, electric horn and electric headlights are supplied as extras.

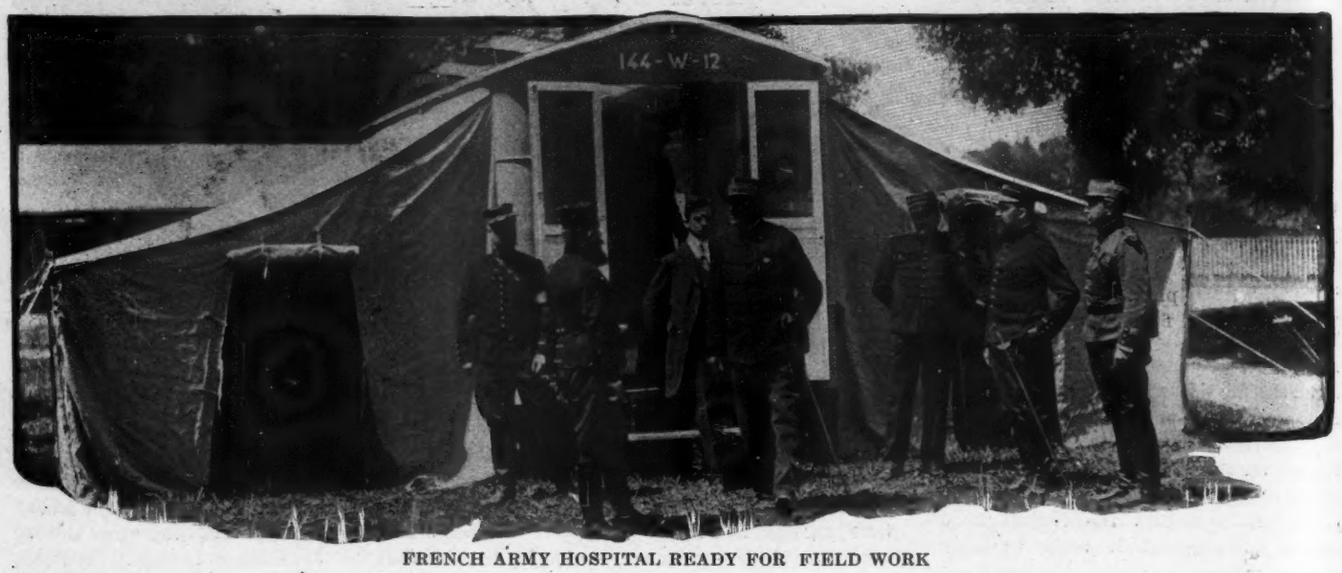


SILENT DRIVE CHAIN AND CONTROL LINKAGE ON 1913 LAMBERT AND BUCKEYE

STOPS SELLING FUEL OIL

Chicago, Oct. 26—Fuel oil, the residue left after the distillations of gasoline, benzine, naphtha and kerosene, which is used by the millions of barrels monthly, in the steel, glass, brick and tile industries, can no longer be furnished to mid-western consumers, according to the edict of the Standard Oil Co. The enormous consumption of the lighter fuels by motor cars, motor boats, traction engines, locomotives, and ocean vessels, has caused an increase of 50 per cent in its cost in the last year, and now it can no longer be supplied. The result will be an enormous expense to steel manufacturers, and others, in changing their whole arrangements, to adapt themselves to the use of producer gas. To meet this it will be necessary to advance the price of various lines of steel. It is opined by some that this edict from the Standard Oil Co. indicates that a process has been discovered of obtaining a greater percentage of high-grade fuel from the petroleum than formerly, which would make the sale of the cruder product unprofitable.

The Realm of the Commercial Car



FRENCH ARMY HOSPITAL READY FOR FIELD WORK

Army Hospital Latest Motoring Idea

French Bring Out Vehicle Completely Equipped for Military Use

By Dr. Alfred Gradenwitz

ONE of the most important military applications of motor cars is their use as ambulances for conveying the wounded to the nearest shelter. As, however, the time lost by this transport, in spite of the great speed of motor cars, may seriously endanger the condition of those patients who are only to be saved by a prompt surgical operation, a French army physician, Dr. Boulant, has had the idea that instead of transporting the wounded to the hospital as it were, to put the hospital on wheels and to take it to the scene of battle. The outcome of this idea is the motor hospital constructed on Boulant's plans by Schneider & Co. of France and tried during the recent French maneuvers.

The Boulant can be described as a travelling hospital fitted up in accordance with the latest achievements of medical science and comprising an up-to-date equipment for the most difficult surgical operations and the use of X-rays. It is mounted on a 35-45-horsepower four-cylinder chassis of the same type as adopted for the Paris motor buses. Its maximum speed on the level, under ordinary working conditions, is about 20 miles per hour.

Features of the Body

The body has been specially designed with a view to facilitating the use of surgical apparatus. It is of practically the same size as that of Parisian motor buses and is subdivided into three main compartments, the entrance being from a broad footboard through a double-winged door, which leads into some sort of vestibule where everything required for the preparation of operations is found. On the right are installed two separate wardrobes for ordinary and hospital dress respectively, the linen being stored in two cupboards on the top. Below the floor covered with a carpet, are cases for the dirty linen, and to the left are found a filter, a water tank and a washing stand. This outfit thus enables the doctor and his assistants before entering the operation room to dress with the same care as in a hospital, thus avoiding any danger of infection.

The operating room is situated in the center of the car and communicates with the vestibule through a double-winged door. It is a spacious room 2.20 meters in width and 3.20 meters in length which allows of an unhampered circulation round the operator's table. It is by day lighted most efficiently by glass panes in the roof and by night by conveniently arranged electric lamps. All the walls are of lacquered wood without any joint and with rounded-off angles, and the floor is of smooth, washable porphyrolith.

Glass-paned cabinets installed alongside the wall contain in special metal boxes the surgical instruments for each kind of operation. These instrument boxes are of the most perfect type, and are sterilized simultaneously with their contents in the digester, which operation can be made underway. Among the surgical instruments should be mentioned Dr. Martel's electric chisel and electric saw and mill, which are bound to prove especially useful for the purposes of military surgery.

The Operating Table

The operating table, the main piece of furniture in the operation room, has been specially constructed for its purpose; apart from the upper plate which is designed for folding and taking up any position, it is made of metal throughout. In its lower part is provided a slide carrying a Roentgen-ray bulb, thus allowing patients to be examined with X-rays on the operation table itself.

X-ray examination and the locating of bullets, fractures or foreign bodies, is greatly facilitated by the special apparatus designed by Ducretet & Roger. A simple and ingenious outfit enables the patient to be examined in full daylight, making markings and even tracing the outline of organs on his skin.

Precautions That are Taken

An interesting feature of the travelling hospital is that the operating room can be readily sterilized by means of ozone. To this effect two conductors placed in the upper part are connected with the same induction coil as otherwise used for X-ray work. The plentiful production of ozone thus obtained insures in this little operation room a more perfect sterilization than is possible even in the most up-

to-date operation halls, thus allowing the most difficult operations to be performed under excellent chances of success. In the operating room is further provided a special washing stand for the operators with two taps handled with the elbow, which yield water sterilized by ultra-violet rays and hot or cold water sterilized in a digester, respectively.

To the left of the entrance is installed a cabinet, part of which forms a table, while the other part can be used as a seat; this contains an electric motor for operating the surgical instruments and a pump supplying water which communicates with a length of hose generally rolled up in a trunk below the chassis. After unrolling this hose and connecting it with the nearest river, pool or pit, a supply of water, passing through a filter, can be obtained, so as to fill the tank.

The lighting and heating plant has been so designed as to allow the car to be used during standstills. The total luminous intensity—300 candlepower as a maximum—is distributed over a certain number of lamps and chandeliers, four of which are placed in front of glass-paned openings, so as to light up the interior of the two tents on either side of the car, whereas another lamp illuminates the foot-board and the ground behind the car. The lighting current is supplied by a 16-volt accumulator battery which is charged automatically by a Blériot constant-voltage dynamo actuated by friction on the steering wheel, the charging current being closed and opened automatically. This battery allows the car to be lighted during a whole night without resorting to the motor. The operating room is heated by a radiator utilizing the heat of the exhaust gases.

Water for the Soldiers

In the front cabin which communicates both with the operating room and, through a side door with the outside, is installed an apparatus for the sterilizing of water by means of ultra-violet rays. This latest process affords the advantage of an admirable efficiency from the bacteriological point of view, coupled with a great output, without altering the water. The filtered water from the tank of the rear cabin enters this sterilizer—of 600 litres capacity per hour—and flows out perfectly sterilized and fresh into a funnel, supplying part of it to the washing stand in the operation room, the supply conduit and tap being themselves designed for sterilizing.

The surplus sterilized water flows out through a tap outside the car and can be used by the men for drinking. The travelling hospital thus is able from time to time to supply a large army corps even at places where only badly vitiated water is available, with absolutely pure and healthy water. It travels within 24 hours to ten villages or centers of water supply, providing the men on the spot with about 10,000 liters of water, which, though possibly derived from the most polluted pool, is supplied in a condition of absolute purity and sterility. The tank also allows the men far removed from any center of water supply to be provided with about 200 liters of water.

The Lighting System

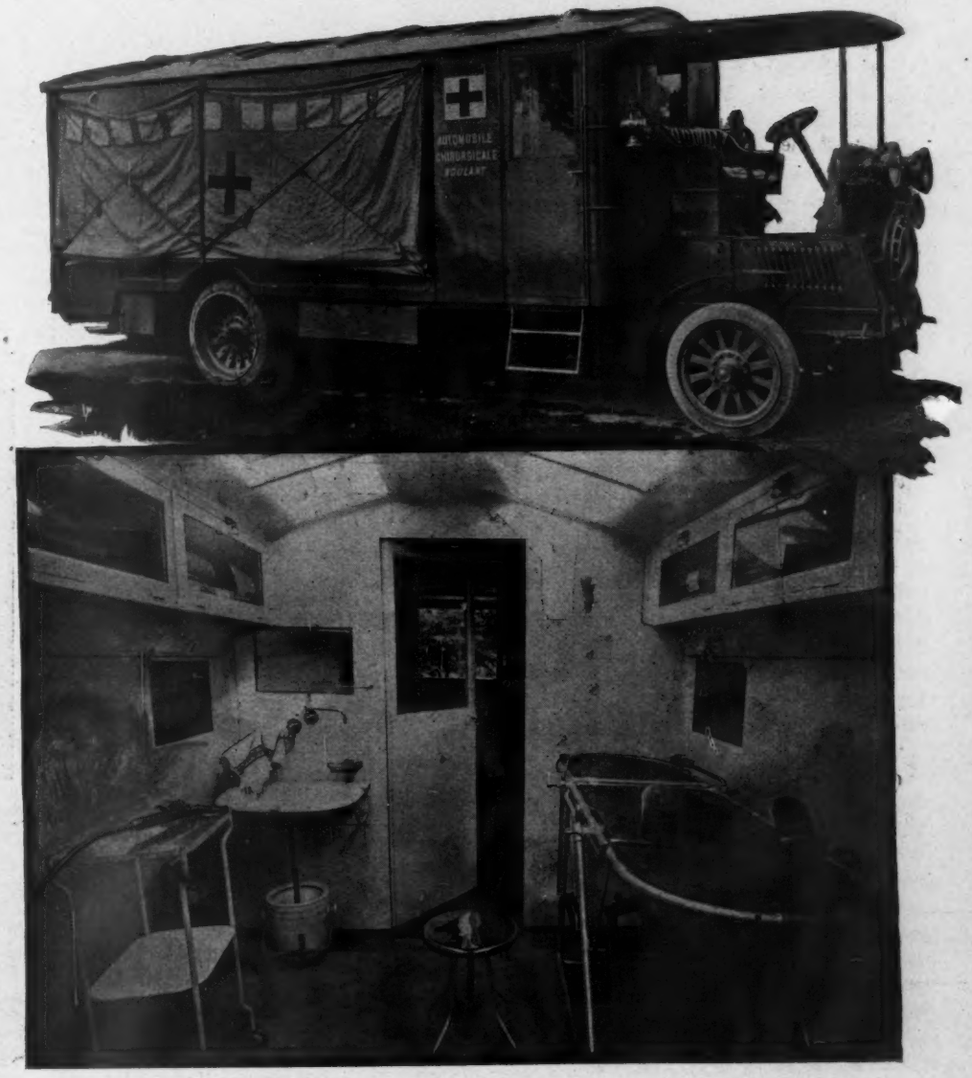
In addition to the lighting dynamo the car comprises another dynamo which supplies current for divers apparatus and machines. This is operated during the standstill of the car by a slowly-running motor and is inclosed in a water-tight case.

The current produced by this dynamo as well as that of the lighting dynamo is controlled from a main switchboard placed in the front cabin. This cabin communicates with the operation room through a glass-paned door; it comprises a bench accomodating several men and can be reached by the driver without passing through the operating room.

In the front cabin is installed a digester for sterilizing the instruments, the bandages and water. This is heated by alcohol, the water sterilized at 130 degrees centimeter being thrown by steam pressure into a cylindrical reservoir fitted with an alcohol lamp, which at any time allows the water to be re-heated.

The outside walls of the operating room are covered with tent cloth folded up in accordeon fashion and fixed to a frame which on stopping the car, is unhooked and fitted into the ground at the proper distance, so as to form immediately two tents of 26 square meters total area for sheltering the wounded, installing an additional ambulance or any other purpose. These tents are folded up in 5 minutes, when the car is ready to start; they comprise windows for day-lighting and are lighted by night.

While being mainly intended for use in the French army, the hospital car also lends itself to a multitude of applications in times of peace. It is in fact bound to prove useful in great cities in the event of fires, accidents, or riots. In the case of railway accidents it could, irrespective of whether the track is disengaged, betake itself to the spot, in order there to serve as center for the salvage work. In connection with any dangerous sporting or military performances, such a car should be kept in readiness, and generally speaking, it will prove a useful adjunct to the equipment of first-aid stations.



BOULANT NEW FRENCH ARMY MOTOR HOSPITAL
INTERIOR OF OPERATING ROOM IN MOTOR HOSPITAL

Motor Truck Will Develop the Teamster

IF horse-pace methods are still continued on the adoption of motor trucks by any firm, then no more brains are required by the truck driver than were demanded of the former teamster.

If modern up-to-date methods are assembled around a motor truck to make it a paying proposition and eliminate the waste of the old horse methods, then a higher type of brains is required and a higher standard of a man to handle the delivery vehicle.

The mental standard of the motor truck driver must be as much in advance of the teamster's as the new methods are in advance of the old.

This is the teamsters' opportunity.

History but repeats itself in the present attitude of teamsters toward the new vehicle. Drivers of the old stage coaches opposed the coming of the railway—but the wise ones took up steam engineering. Seamstresses fought against the introduction of the sewing machine and southern labor against the introduction of the cotton gin, but the ones who were wise enough to see that all their efforts would not prevent the coming of these improvements and prepared themselves to fitness for handling the new inventions reaped a large reward.

To many, a new labor-saving invention is a menace, a lion in the way to be strangled, put out of existence and hindered from being popular by every means possible. By a little study and training, however, this so-called lion can be turned into a very tractable beast which will do work

Power Vehicle Offers Horse Drivers Opportunity to Advance

for the formerly timorous workman, enabling him to earn more for himself and family with less effort. It is no figure of speech to call a constructive invention labor-saving.

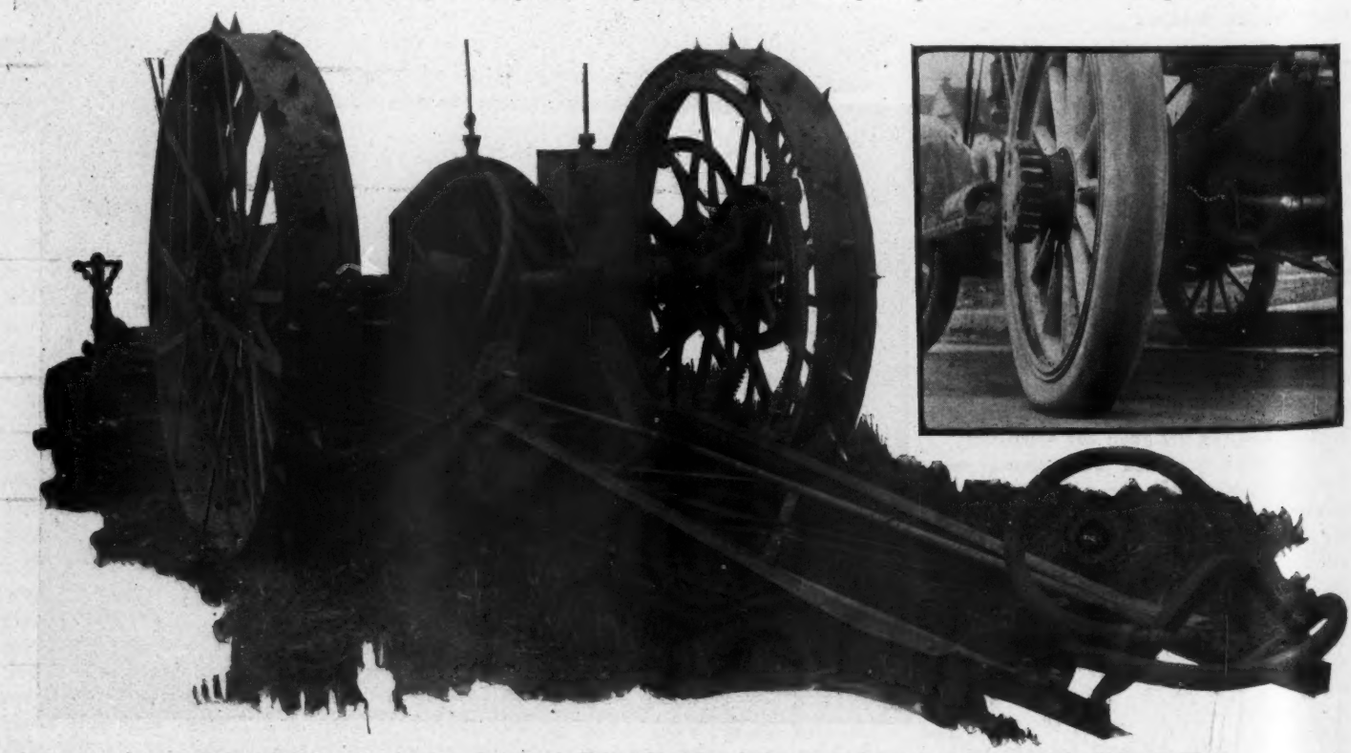
Teamsters must realize that the motor truck is here in numbers now and that within 10 years they will be used almost universally. They must realize, too, that it takes more brains and effort to operate a motor system satisfactorily just as at the same time it means increased pay. To attain to a motor vehicle means extra study and effort, but those who see first the opportunity will be reading up on delivery systems, and on motor mechanisms, but more particularly to post themselves on those methods which must be used in connection with motors as differing from horse-pace systems.

Horses can loaf a large percentage of the day. Business is used to seeing horses idle and hence thinks nothing of it from the standpoint of efficiency, but the motor truck quickly is educating. With a motor idle minutes are worth dollars per day, and users must keep motor trucks on the go all the time. Loading and unloading must be quick and stops as short as possible.

This will mean reorganization of shipping rooms and handling systems, new arrangements of platforms and the adoption of delivery devices. Here is the opportunity of the present teamster to become posted, to make himself valuable to his employer, fitting his mental caliber to the standard required by the new trucking business.

This will develop greater personal efficiency. Without greater effort a man may accomplish twice as much hauling in a day. Instead of loafing periods which sap his mental vitality and dull his mind, the truck-pace work will develop alertness and thus from an occupation which has been mentally dulling lift to a better standard a whole class of men who might amount to something real if they had the chance. Here in the motor truck and truck delivery is the chance and many a man is to be made anew by its demands and his interest.

Frank Fuller, of Fuller & Fuller, wholesale druggists of Chicago, states that the greatest good to his firm resulting from the use of motor trucks for delivery is from the better type of men brought to work by the motors, in whose hands the delivery of goods is safer than ever before. With a higher mental equipment and instincts these men have more tact and can deal better with the critical type of men of the retail drug trade than could the former teamsters. Many of the customers in some parts of the city are very self-important and of little education outside of their own line, demanding one thing and another and asserting this or that in a way that takes more than the usual amount of tact on the part of drivers.



ZIMMERMAN TRACTOR BEFORE ATTACHMENT AND COG ON CAR HUB WHICH TRANSMITS POWER

Tractor Attachment for Motor Cars

W. H. Zimmerman Brings Out Device for Use of the Farmers

TRACTION is the most serious obstacle in the use of motor cars in agricultural and kindred fields. Small, narrow wheels have been found inefficient in soft and rough ground, and under the severe draw-bar load of plowing and other farming operations. To remove this obstacle, thus placing the motor car, with only slight alterations, on a par in points of traction with the more or less clumsy and heavy tractors, the Auto Tractor Co., Chicago, has produced a farm tractor attachment for motor cars that enables them to be applied to this class of work.

Traction is obtained by means of a pair of 6-foot, 10-inch-tread spiked wheels, mounted to the rear of the car, and driving at a reduction from spur gears on the wheel hubs. The tractor is shown in an accompanying illustration, as attached to a Reo. The attachment permits any standard motor car, with no structural changes, to be used in heavy draught work, utilizing its power to the best advantage through suitable gear reduction and large diameter, broad-tread traction wheels. An auxiliary cooling attachment is provided to assure a cool engine, and the machine is steered and controlled in the usual manner.

W. H. ZIMMERMAN'S TRACTOR AS IT IS APPLIED TO A MOTOR CAR

The attachment as shown in the illustration consists of a pair of 6-foot suspension-type steel wheels, mounted on a rigid axle, with approximately a 72-inch tread. It has a heavy steel frame, underslung, adapted to be disposed beneath the car. An auxiliary radiator is mounted on the frame, with a length of steam hose for connection with the regular cooling system of the car. The frame is suspended from the front axle at the front end and supports the rear axle by means of a pair of chairs bolted over the axle tube. The drive to the traction wheels is taken from a pair of gear pinions, which form part of a special hub-cap.

A suitable reduction for field use, giving a speed of about 2 miles per hour, is obtained by a series of planetary gears, composed of an externally-toothed wheel, with a toothed hub. Meshing with this hub-pinion are two planetary gears, which served to drive an internally toothed gear ring, secured to the wheel spokes. These planetary gears are held against rotation by double cross arms, secured to the axle. An attachment is provided, taking drive from the first-mentioned gear, to drive a countershaft, upon which is mounted a belt-pulley for stationary work.

A high speed, for road hauling, which affords a speed of about 4 miles per hour, is obtained by meshing the drive-pinion direct with the internally-toothed gear ring.

The cooling system consist of a radiator, mounted at the rear of the attachment, to which is connected a line of hose. The water from the cooling system is made to pass through it, in connection with the regular radiator on the car. In addition to this, a storage tank holding 24 gallons of water is added to the system, and a circulating pump and fan, driven from the tractor. Drive is taken from both rear wheel hubs and is received independently by the two drive wheels, being compensated for by the regular differential in the rear axle of the car.

It is claimed that one man can attach the tractor to a motor car in from 5 to 10 minutes, and that it may be disconnected in half the time. The alterations necessary to adapt a motor car to this attachment are so slight that they in no way impair its usefulness in its normal sphere, the only drawback being the necessity for the removal of the rear mudguards. This objection, however, can be easily met with, by the application of special hinged or quick-detachable mudguards.

The advantages of this attachment are, that with all of the high-grade mechanical features of a motor car, and the myriad uses besides in field work to which these vehicles may be put, this device widens their scope of usefulness still further, permitting them to successfully compete with the expensive, cumbersome and heavy tractors, whose sphere of usefulness is at best restricted within narrow limits. The motor is run only at normal speed, and in high, or direct-drive gear, thus delivering the power of the motor to the rear wheels with the utmost efficiency, and the minimum of frictional losses in transmission.

In use, a 20-horsepower Ford was able to draw three 12-inch plows in sod, while a 40-horsepower Oldsmobile drew four 14-inch plows in stubble. The same car was used in threshing, and might easily have been used to harvest the grain threshed. That such a device would be cheaper than a tractor is at once apparent; and it is also urged that this new use to which the device enables motor cars to be put will increase the market for motor cars among the rural population; making the car a source of income and actual saving instead of an expensive luxury, as high-powered pleasure cars are still regarded by the majority of bankers.

A feature of great importance, but which is not peculiar in its application to this implement, is the fact that in the rush of the harvest season, and in spring plowing, the machine may be run day and night without deleterious results. It has been exhibited at several of the state fairs. W. H. Zimmerman is the inventor and president of the company.

GOOD TRUCK DEMONSTRATION

To prove the value of the modern motor truck for hauling goods Robert G. Howard, manager of the Bessemer Motor Truck Co., at Boston, took a load of 3,000 pounds of druggists' supplies to Springfield, Mass., last week, making the trip of 104 miles in 6 hours 10 minutes actual running time and used 9 gallons of gasoline, or an average of 11½ miles per gallon. As the truck used was a 1-ton capacity and it carried an overload of 50 per cent, the drug firm was well satisfied with the performance and ordered a similar one.

From the

MICHELIN Quits Racing—The Michelin Tire Co. announces through J. Hauvette-Michelin, head of the American interests, that it has withdrawn from further participation in motor car racing.

Speedway Given Away—The South East Calgary Corporation, owners of a 4-mile straightaway motor track at South East Calgary, Alta., has announced its intention of turning the track over to a new country club which is now being formed and which will erect a clubhouse facing on the track.

Highway Safety League Active—The Highway Safety League formed in Boston some months ago by prominent men, many of them owners of motor cars, has now started on a crusade to insist that the rear numbers of cars be so illuminated at night as to be visible according to the law at least 60 feet.

Motorists Go Hunting—Several members of the Hoosier Motor Club of Indianapolis enjoyed a 'possum hunt near Terre Haute, as the guests of Terre Haute motorists, Saturday evening, October 26. Members of the club are organizing an amateur minstrel troupe and after giving a performance at an Indianapolis theater will give performances over the state for the benefit of different motor car clubs.

Indianapolis Profits—More than $25,000 has been added to the Indianapolis city treasury this year by motor car licenses. On January 1, 1912, there were 188 miles of paved streets in the city. Since that date contracts for paving streets have been awarded amounting to about $500,000. Street cleaning this year will cost the city $120,000; repairing and maintaining unimproved streets $55,000, and repairing paved streets $85,000.

Ohio After a Strong Law—Bills to make car stealing a penitentiary offense and to require all horse-drawn vehicles to carry lights will be offered to the next legislature in Ohio by the Ohio Automobile Federation. The federation's bill provides a prison term of 1 to 7 years for stealing a car worth more than $35. The light bill calls for all horse-drawn vehicles to carry a light visible 200 feet front and rear, with a maximum penalty of $25 fine.

Wisconsin Roads Marked—The Lake-to-River Road Association, organized recently by Milwaukee and other state interests affected by the planning of a good highway across the state of Wisconsin, from Lake Michigan to the Mississippi river, reports that it has completed the marking of the route by means of banding telephone posts, as in Iowa. The distinguishing mark is a white band on each post, a red X being placed in the center. The association is setting a new mark for lake-to-river or across-the-state roads by making part of one road suffice for two across-the-state routes. The road will lead from Milwaukee to Madison, the state capital, via Watertown. At Madison it branches northwest to La Crosse, via Baraboo, and southwest to Prairie du Chien and Dubuque, Ia., via Mineral Point, Platteville and Dodgeville.

Richmond to Have a Meet—The Richmond Automobile Club of Richmond, Va., has completed arrangements for a 2 days' racing meet to be held at the state fair grounds on November 29-30, following the Virginia-Carolina football game on Thanksgiving Day. Fred Wagner of New York has been engaged to start the races.

Shows Farmers' Interest—State Registrar of Motor Cars J. A. Shearer, in a statement given out recently, shows the large increase in the number of motor cars registered from the agricultural counties of the state. He says the large percentage of the mail received by the department now comes off of the rural delivery routes, which shows that the farmers are buying cars faster than ever before. In the figures made public, Mr. Shearer shows the registration by counties up to October, 1912, in comparison with the total registration for 1911. The farming counties show gains of from 25 to 60 per cent.

Washington Club May Reorganize—A committee of five members of the Automobile Club of Washington, D. C., has been appointed to consider the advisability of dissolving the organization, selling the club's country home and the formation of a new organization along different lines. The club has been a social organization ever since its inception and the feeling is now general that it has outlived its usefulness. The tentative plans call for the formation of a motor car association, with offices in the downtown section and with a paid secretary in charge. Nominal dues will be charged and efforts

Old Roads Made New

THE United States government is giving the good roads movement powerful support—more powerful in fact than most motorists appreciate. Its office of public roads, in charge of Logan Waller Page, has become a most efficient aid to the cause. Through the courtesy of this department Motor Age is starting a series of illustrations designed to show

Four Winds

will be made to enroll a large membership. When the committee reports a special meeting of the club will be held to act on it.

Truck Owners Organize—Motor truck owners of Portland, Ore., have formed an organization known as the Motor Truck Owners' Protective Association. Articles have been filed with the secretary of state. One of the objects of the association, as stated in the articles, is to secure legislation favorable to their interest and fight unfavorable legislation.

Farmers Will Help—The Columbus Automobile Club, Columbus, Ohio, will soon take steps towards the improvement of the road from the Buckeye capital to Buckeye lake, a summer resort located about 35 miles east of the city. The road known as the Black Lick way, which is 3 miles shorter than the National pike, is the one which will be improved. A committee of the farmers along the road met with the board of governors of the club and ways and means for the improvement were discussed.

Brazilian Motor Road—Sao Paulo, situated on the northern side of the Serra do Mar mountains, is to have a motor road connecting it with the coast at Santos. A loan of $650,000 already has been issued by the Empreza Autoviaria Paulista for the construction of the first section of the road. When this highway is completed it is anticipated the trip from one point to the other can be made in an hour.

Raising Road Fund in Ohio—Secretary A. P. Sandles of the Ohio state board of agriculture is in Portage county, Ohio, at the head of a campaign to raise $250,000 by popular subscription for road improvement in that county. Dan R. Hanna, owner of a large farm in the county, has agreed to donate $250,000 if a like sum is raised in the county. According to Secretary Sandles, the Portage county farmers do not want to wait on the Ohio legislature for a bond issue.

Five Minutes the Limit—Chief of Police Copelan of Cincinnati has just issued an order which forbids owners to leave their cars stand for more than 5 minutes in the district bounded by Elm on the west, Main on the east, and between Fourth and Sixth avenues. The rule applies to all other vehicles. According to Chief Copelan, the rule is a precaution for the protection of life and property in that district.

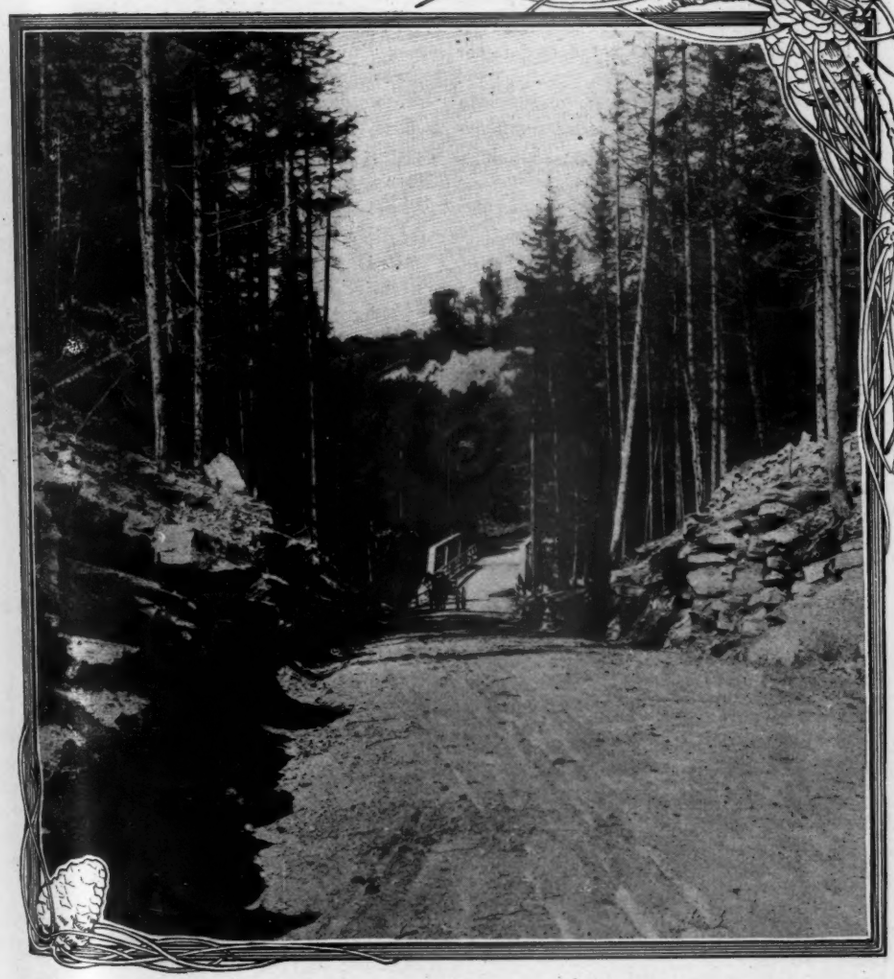
Would Organize Chauffeurs—The central labor union of Washington, D. C., has decided to attempt the organization of the chauffeurs of the national capital. Officers of the union express the feeling that more care on the part of motor car drivers would follow organization since interest in the union would demand more careful driving and the requirements for membership would also eliminate the undesirable element among chauffeurs.

New Motoring Order—A number of motor car owners, drivers and others identified with the motor car trade have organized the Fraternal Order of Honk Honks, which will have its headquarters at Anderson, Ind. It has been incorporated without capital stock under the Indiana voluntary association act. The directors for the first year are R. D. McKain, J. Stockdale and H. F. Dunn.

City Owners Win Tax Fight—After a fierce battle between the city residents of Oshkosh, Wis., and farmers before the board of review on income taxation, the basis of valuation of motor cars has been placed at $600 for city cars and $300 for those owned in the country districts, and the new basis is regarded as a victory for the residents of the cities. It was at first proposed to assess all machines owned by residents of cities in Winnebago county at $800, while the farmers' cars were listed at $300 each. The 395 owners living within the city of Oshkosh started a fight and succeeded in having the individual valuation on their cars reduced to $700.

Means More Boulevards—In granting to the board of park commissioners the legal maximum park levy of 9 cents on each $100 of taxables, beginning in 1913, the city council of Indianapolis, Ind., has assured the success of the boulevard scheme which is being worked out along both banks of Pogues' run, Pleasant run, White river and Fall creek through the city, as well as improving and converting certain thoroughfares into boulevards. The whole scheme, begun in 1908, will cost from $5,000,000 to $7,500,000 when it is completed, but it is expected the value of property in the city will be enhanced far more than that by the improvement.

Part I—New Hampshire



how old roads are made new—before and after views. This week there are presented views of the road between Fabyan, N. H., and Twin mountain, which has been converted into a motor highway in order to avoid a dangerous railroad crossing. The first illustration shows how the roadbed looked after it had been dynamited to break up the rocky formation.

The Motor Car Repair Shop

Testing the Mixture

IT has been recommended that the proper adjustment of a carbureter can be obtained with great facility and precision by mounting upon the inlet manifold of the motor, a device constructed as shown in Fig. 1. It consists of a piece of ¼-inch tubing tapped into the inlet manifold of the motor as illustrated, a reduced combination coupling and valve connecting one end of this tubing to a piece of ½-inch tubing about ½ inch long; the latter being packed first with a little gauze, of cotton wool or wire, then with as many small brass capillary tubes as can be fitted into the ½-inch tube above the gauze.

With this device one has but to start the motor, open the valve, and apply a flame to the exposed end of the ½-inch tube. The gas that issues therefrom will ignite and burn with a colored flame, which, if blue in color, with little light green flame points issuing from each of the little capillary tubes, indicates that the mixture is correct; but if the flame is red or yellowish in color, the mixture is too rich, and the carbureter should be adjusted until the blue flame is obtained. If, in the process of adjusting, one finds that the flame becomes yellower as the adjustment is made in a certain direction, then adjust in the opposite direction until the desired blue flame is obtained. The yellow or lighter flame may be seen when the mixture is too strong, that is, when it contains too much gasoline. Therefore, if an improvement is not obtained in the color of the flame when the mixture is enriched, weaken the mixture by adjusting in the opposite direction. Generally, if the mixture is too weak, the flame at the top of the device will puff up and go out. This is often accompanied by a coughing and popping in the carbureter.

This recommendation was obtained from an engineer who has specialized in the design, construction and installation of acetylene gas lighting outfits, and he claims that he is now using devices of this kind on his motor cars with excellent results.

Adjusting a Carbureter

Adjusting a carbureter consists in regulating the proportion of air and fuel in the gaseous mixture so the mixture may be consumed to the best advantage in the motor. As for the ways and means of doing this, all depends upon the construction of the carbureter, and the facilities for adjustment. Before adjusting a carbureter, one always should endeavor to learn how to perform the operation by consulting either the manufacturer of the carbureter or motor, or some user that has successfully done the trick; for a trick it is, in many cases.

Hints for the Amateur

There are so many different designs and constructions now in use that no rules can be given that will enable one to successfully adjust all types; however, certain simple rules may be given which will apply to many designs. For instance, an experienced motorist or mechanic would begin by assuring himself that there is gasoline in the supply tank, then in the float chamber of the carbureter; the latter usually is done by depressing the float, or in some other convenient way, opening the valve governing the supply to the float chamber so that fuel will overflow from the carbureter.

Most carbureters have spray nozzles, so, if possible, an effort would be made to see if the fuel was passing through it or them when the float chamber was flooded. He would then try to start the motor by cranking it over a few times, noting at the same time whether or not there was reasonable compression in the cylinders. It is quite difficult to adjust a carbureter when the compression is not equally good in all cylinders; for poor compression in one or more cylinders will cause weak explosions, or misfiring, in those cylinders.

As the speed and power of the motor is generally determined by the sound and rhythm of the explosions, it is necessary that there should be no misfiring or loss of power from poor compression, faulty ignition, or air-leaks around the valve or inlet-manifold connections. This, of course, does not apply to factory carbureter adjustors when equipped with dynamometers, instruments which indicate the speed and power developed by a motor.

Before any adjustment on a carbureter is changed, one should decide if such a step is necessary. There is a sort of standard group of troubles, directly and indirectly connected with the carbureter, that should be known before the adjustment of a carbureter is attempted. For example, a rich mixture—in which the proportion of gasoline or fuel abnormally exceeds the amount of air—may be due to faulty adjustment of the float or air-valve, clogged air inlet pipe, dust on the inlet pipe screen, leaky float valve, or to a so-called water-logged float, a term given to soggy cork or punctured metallic floats. A poor mixture, on the other hand, may be due to faulty adjustment of the air or float valve, a leak in the inlet manifold or around the pipe or valve connections; the fuel-supply cock may be partly clogged, or there may be water in the gasoline. If a motor cannot be started, the spray-nozzle, float-valve, or feed-pipe may be clogged, the gasoline tank empty, the supply-cock shut off, or the air pressure in the tank too weak.

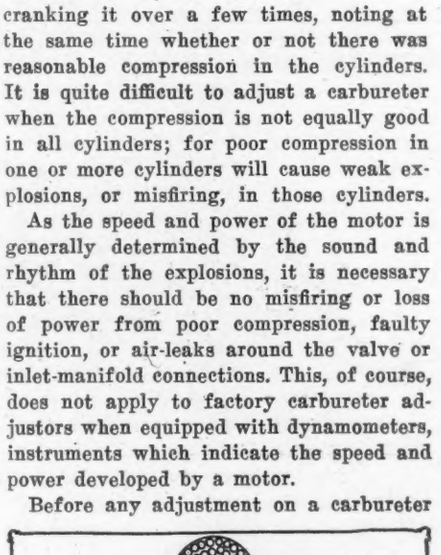


FIG. 1—DEVICE FOR TESTING MIXTURE

In addition to these troubles, there are many more that pertain only to certain types and makes of carbureters. These are very important, and it is because of them that one should always try to consult a reliable source of information before attempting to adjust a carbureter whose peculiarities are not understood.

Overloading a Common Error

It is a most common error of the new motorist to overload his car either with passengers or luggage to such an extent that during the first few months, or year, of its use the car is subjected to unusually severe strains. The result is that the tires do not stand up as recommended; the car shows neither the power nor speed of the company's demonstration car; springs seem to flatten out or break before the year's guarantee has run out; brakes do not work with the necessary efficiency; and the general wear and tear on the entire chassis mechanism makes the repair bill at the end of the year seem unreasonably large.

Of course, it is difficult at times to prevent overloading a car; but under such circumstances, the operator should drive more slowly, take the bumps more easily, and bear in mind that the increased weight is going to make the brakes more difficult to operate with the same efficiency as with a normal load. Manufacturers of motor cars have been very generous in building their cars with a liberal capacity for overload; and the motorist should endeavor to cooperate with him in his efforts to prevent the abuse of the car in this manner. The manufacturer is just as anxious to have his product give good service as the owner; for he knows that a better advertisement can hardly be found.

The Motorists' Bookman

Compounding of Rubber

INTENDED for use in factories and by practical rubber workers and chemists, "Crude Rubber and Compounding Ingredients," by Henry C. Pierson, makes its appearance in a second, renewed and revised edition. Mr. Pearson is editor of the India Rubber World, and a recognized authority, the publishers of that journal being also the publishers of this work. The volume combines the features of a general treatise on the rubber industry and rubber processes, with a classified lexicon of terms that constitutes a compendium of rubber information. As a reference work, it is of great value.

The book contains 298 pages of matter, and is completely indexed. It is unillustrated, and published by the India Rubber Publishing Co., New York.

Good Roads Year Book

The "Official Good Roads Year Book" of the United States for 1912 contains a fund of valuable information on this intensely live topic. Among its contents is to be found a list of the officers and members of the American Association for Highway Improvement, together with the constitution and by-laws of this organization; road legislation in the United States, showing from what sources funds are obtained, and how disbursed; under whose supervision work upon our highways is carried on; the suggested state aid bill printed in full, with an analysis of the same; bond issues, appropriations and mileage in the various states; the acting highway officials, their addresses and duties; a chapter on experiments with convict labor; an extensive list of patents issued in 1911 pertaining to roads; a list of general treatises on road and bridge construction and a great number of bulletins, circulars and documents published by the office of public roads. The associations of the United States, with their officers, that are members of the International Association of Road Congresses, also a list of manufacturers of road machinery and materials, and of road contractors, are contained in this compendium of highway information. A brief history of road building and short sketches of the various types of roads, their maintenance and repair, are to be found within its covers. The information compiled therein is brought down to December 31, 1911. Published by the American Association for Highway Improvement, Washington, D. C. Price, $1.

Roads, Paths and Bridges

Few subjects before the American people at the present time are of more importance or so far reaching as that of good roads. A disseminator of practical, authoritative information on the subject, comprehensive so far as its limited space permits, is the small volume, "Roads, Paths and Bridges," by Logan Waller Page, director of the United States office of public roads.

An interesting chapter on the history of roads leads the reader on, as a good road will, to investigate further. Highway legislation is next taken up, wherein is brought out the fact that the best results in a comprehensive system of roads are to be obtained under centralization of authority and responsibility. Another point which the author makes is the necessity for expert knowledge of highway engineering on the part of those undertaking the work.

Specific, practical information is given in the chapter on location and specifications, while the different kinds of roads—earth, sand-clay, broken stone and macadam—are discussed separately. The author's distinction between maintenance and repair is especially good, as he says, "To maintain a road means to keep it always in good condition, while to repair a road means to make it good only occasionally," and follows with methods for the maintenance of various kinds of roads.

The roadside, paths and bridges, and the new problems brought into the science of highway construction by the motor car, are discussed. Appended is a list of authoritative works on roads and road building. The book is meaty for whosoever is interested in the subject. Published by Sturgis & Walton Co., New York, N. Y.

A New Motoring Country

The ancient discoverer's averred right to preemption has in a mild and modified form descended to the motorist who feels a particular proprietorship in stretches of good roads wherever found. One of the latest discoveries in touring ground is the countries on the southern shores of the Mediterranean. When the French acquired possession in northern Africa and projected their boulevards along the lines of the ancient Roman military roads, even into the desert, they did not wittingly pave the way for the motor car. In "About Algeria," C. Thomas-Stanford writes, "Algeria, a land of great distances and admirable roads, is especially suited to the use of the motor car. And it is a country brimful of interest, historical and actual." He then proceeds to tell much of the special charms and matters of interest to be found there, pictorial, historical, psycological, etc. Selecting the cities of Algiers, Tlemcen, Constantine, Biskra and Timgad as bases from which to make radiating journeys, many delightful motor trips are suggested. From Algiers, facing the sea, through Constantine, the wonderful city of precipices, to El Kantara, the scenic gateway to the desert, under the guidance of Thomas-Stanford one's interest cannot flag. Witness to his keen appreciation of the treasures of this land, through the whole book runs a plea for the preservation of the beautiful and historic, and a retention of local character. Besides an excellent road map, the book is admirably illustrated. Of exceptional note are the beautiful doorways pictured, each a page of history in itself, a theme for the imagination, for, if the doorway be thus beautiful, what of the mind that conceived it which dwells within? Published by John Lane Co., London, England. Price, $1.50 net.

German Directory for Sportsmen

Braunbeck's Sport Lexicon for 1912-1913, in its usual size and form, has been brought to date by the inclusion of new autobiographies, such as that of Graf Zeppelin, Dr. Parseval and Prinz Heinrich von Preussen, also new articles and new addresses. It is printed in German. Published by Gustav Braunbeck, Berlin, Germany.

By the Father of Aviation

"Birdflight As the Basis of Aviation" is a translation of a work by Otto Lilienthal, by A. W. Isenthal, and published by Longmans, Green & Co., of New York. The book was first published in German more than 20 years ago, and still the exhaustive study, research and experiment that was finally concluded by his death in a motor glider, stands as authority today. As Euclid is to the science of mathematics, so is Lilienthal to the science of aeronautics—the fundamental authority. The results of his efforts are told in the translation of his own language in this volume, accompanied with many useful drawings and photo-gravures. The purpose of this translation is to stimulate afresh in English-speaking countries, experiment and research to the end of reproducing mechanically the flight of birds, rather than the pursuit of the glittering bubble of power-gliding, which is so responsive to swift development.

Rubber Hand Book

"Rubber Hand Stamps and the Manipulation of India Rubber," by T. O'Connor Sloane, is a complete and comprehensive treatise on all branches of india rubber manufacture, including its history, methods of production, its properties and peculiarities, and the myriad uses to which this material is applied. A very useful chapter on the manufacture and repair of rubber vehicle tires is included. The work concludes with much valuable information regarding miscellaneous rubber repairs. It is admirably adapted for use as a text or handbook for any branch of rubber manipulation. It contains 175 pages, comes bound in red cloth. The Norman W. Henley Publishing Co., of New York; $1.

Among the Makers

NEW Pullman Sales Manager—C. W. Jacoby has resigned the position of eastern sales manager of the Standard Electric Co., to assume the general sales management of the Pullman Motor Car Co., York, Pa.

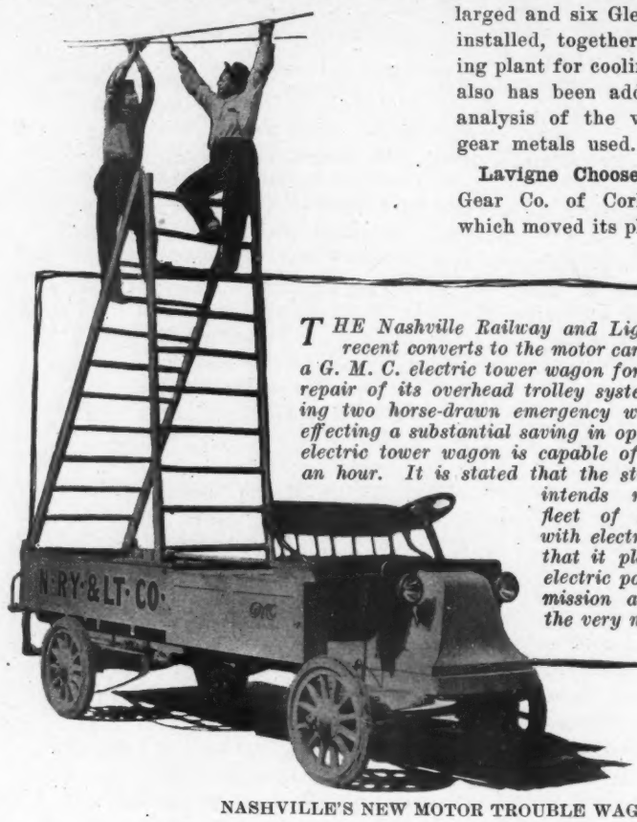
Henderson Gets More Room—About 13,000 square feet of space has been leased in the Industrial building by the Henderson Motor Car Co. in Indianapolis and is being used as a paint shop, pending the completion of a large addition to the company's factory. The former paint shop is now a final assembly department.

Wilmot Again Chosen—The Minneapolis Automobile Trade Association has elected Walter R. Wilmot manager for the 1913 show in the Armory and annex and has executed a $5,000 contract for the decorations. The space for the show has been doubled by the erection of an addition to the Armory which adds 27,000 square feet of space. Accessories will be displayed in the gallery of the Armory, as before, and the vehicles will be shown on the ground floor of the two buildings.

Probably No Show in Washington—The chances for a motor car show in Washington, D. C., are slight. The chief obstacle is the lack of a building of sufficient capacity to house the exhibits of all those who wish to take part in any show. Convention hall, where the previous shows have been held, is the only available building, but there is some question about filling it with cars, many dealers believing it unsafe to use it for show purposes again. The show question will be discussed by the dealers at a meeting to be held in the near future.

Exhibit in Dairy Show—A number of enterprising dealers are making exhibits at the international dairy show, which is being given in the Auditorium from October 22 to October 31 inclusive. This is the second annual dairy show and it has been found an excellent medium for getting into touch with the agricultural classes. Among the exhibitors were: Petrol Motor Car Co., Milwaukee, Petrol; Hustis Brothers, King and Borland electric; Imperial Auto Sales Co., Imperial; Oakland-Wisconsin Motor Car Co., Oakland and Detroiter; Buick Motor Co., Buick trucks; Hickman-Lauson-Diener Co., Ford.

New Kissel Plant Nearly Ready—The Kissel Motor Car Co. of Hartford, Wis., expects to be able to take occupancy of its new branch plant at Milwaukee on or about November 15. The work of rearranging the new plant, formerly the Romadka trunk factory, is progressing rapidly, and some of the equipment is now being installed. Improvements to the main plant at Hartford, Wis., are being completed, the new buildings having been equipped and put into condition for continuous operation at full blast during the winter. The new Kisselkar service buildings at Chicago and St. Paul are nearing completion, and the new station at Boston has its formal opening this week.



THE Nashville Railway and Light Co. is one of the recent converts to the motor car, having just installed a G. M. C. electric tower wagon for emergency work and repair of its overhead trolley system, the truck displacing two horse-drawn emergency wagons in addition to effecting a substantial saving in operating expense. The electric tower wagon is capable of a speed of 18 miles an hour. It is stated that the street railway company intends replacing its entire fleet of horse-drawn vehicles with electric power wagons and that it plans to put two more electric power wagons into commission as trouble wagons in the very near future.

NASHVILLE'S NEW MOTOR TROUBLE WAGON

Dixon Company Changes—At the regular monthly meeting of the board of directors of the Joseph Dixon Crucible Co. following changes in the officers and board of directors were made on account of the death of Vice-president William H. Corbin: George E. Long, former treasurer, was elected vice-president to succeed Mr. Corbin; J. H. Schermerhorn, former assistant secretary and assistant treasurer, was elected to membership in the board of directors and made treasurer of the company.

Big Plant Expansion—The New Process Raw Hide Co., Syracuse, N. Y., has just erected additions which make its complete plant now the largest single plant in the world devoted exclusively to gear-making and gear-cutting, it is claimed. The latest additions are a four-story and basement wing extending 65 by 180 feet at right angles to the old building and a heating plant in the rear 60 by 50 feet, housing three 125-horsepower boilers. The new buildings are entirely fireproof throughout, having steel framework, reinforced concrete floors, concrete roofs, brick curtain walls and steel window sash. New equipment to the extent of $100,000 has been installed. The hardening and heat-treating department has been enlarged and six Gleason rotary oil furnaces installed, together with an oil refrigerating plant for cooling the oil. A laboratory also has been added for the testing and analysis of the various alloy steels and gear metals used.

Lavigne Chooses Racine—The Lavigne Gear Co. of Corliss, Wis., and Detroit, which moved its plant and equipment from Detroit to Corliss about a year ago, and which was reported to have been contemplating a return to the Michigan metropolis, has leased the big Racine plant of the Racine-Sattley Co. of Racine, Wis., and Springfield, Ill., and will occupy 50,000 to 75,000 feet. The Racine-Sattley company recently was reorganized and decided to concentrate its works at Springfield, Ill., abandoning the Racine works. The Lavigne Gear Co., which manufactures steering gears and other motor car parts, has been occupying a part of the mammoth works of the Wisconsin Engine Co. at Corliss. The quarters became much too small, and it was proposed to return to Detroit, especially as the Wisconsin Engine Co. came into the need of more room for expansion at once. The Lavigne company plans to greatly increase its working force and capacity without delay.

Hickman Re-elected President—Isaac G. Hickman, president of the Hickman-Lauson-Diener Co., state agent for the Ford, was re-elected president of the Milwaukee Automobile Dealers' Association at the annual meeting held on October 23. Emil Estberg was re-elected vice-president. George P. Hewitt was elected treasurer, succeeding August A. Jonas. A. E. Raffauf was re-elected secretary. The executive board consists of Messrs. Hickman, Estberg, Hewitt, Raffauf and Alton J. March. Although the association wound

Land and Dealers

up the fiscal year of 1910-11 with a comfortable surplus in the treasury, reports at the last annual showed a huge deficit, due to the promotion of the Vanderbilt cup races at Milwaukee this year. The association has twenty-two active members, consisting of the principal dealers in Milwaukee county.

New Garage Order Effective—Under the provision of a new ordinance passed by the Salem, Mass., board of aldermen last week every garage in the city, whether public or private, must have a floor of fireproof construction. It further provides that no building or structure shall be used for a garage, whether private or public, for the use of any motor car except those electrically-driven, unless the mayor and aldermen have granted a permit therefor after a public hearing following 14 days' notice, which shall be given at the expense of the applicant. The ordinance not only provides for the sort of material to be used in garage construction, but also clearly defines their care, precautions in the storage of gasoline, etc.

Has Farmer for Agent—The Thomas B. Jeffery Co., Kenosha, Wis., maker of the Rambler, has introduced a new idea in the motor car selling field by enlisting a well known agriculturist in the agency for the Rambler. The agent is George Wendel of Mendota, Ill., who owns 640 acres of fertile land near that city, and is regarded as one of the most progressive farmers in the middle west. Mr. Wendel operates all farm machinery by steam power, uses steam and gas tractors, has natural gas on his farm, and lets no modern improvements get by him. To make the fullness of life complete, he has now taken the agency for a motor car, the Rambler, one of which he has used for several years. It is believed that in a short time other motor car manufacturers will invade the agricultural ranks to find agents to spread the gospel of motoring, more specifically their own makes of cars, into the world of the farmer throughout the United States. The experiment is being watched with interest.

Shorter Hours Granted—The Aluminum Castings Co. has inaugurated a 9-hour workday schedule at its Manitowoc, Wis., plant, which is devoted to the manufacture of castings for the motor car industry. The wage schedule has been changed so that employes receive wages equal to a 10-hour workday rate. The same schedules have been put in force in the Detroit and Clevelands works of the big company. It is stated by Conrad Werra, manager at Manitowoc, that the new schedules were to have gone into effect on May 1, but a serious strike at Manitowoc just previous to that time delayed the change until October 1. The strike took such proportions that it was at one time proposed to abandon the Manitowoc plant entirely and move to Milwaukee.

Packard in Germany—Because the American demand readily absorbed a steadily increasing output, the Packard company never has pursued an aggressive policy looking toward distribution in Europe. Several years ago, a service depot was established in Paris, but this was for the express purpose of providing technical attention for Packard owners from America and assisting them in disposing of the red tape which attaches to touring on the continent. Out of this practice grew a demand for Packard cars in France with the result that a sales department was added to the Paris service station. Now the movement has extended to Germany and within the last few days a contract for the sale of Packard cars and trucks has been closed with Carl Dreymann, who has his headquarters in Dusseldorf. He has arranged to open a number of branches.

Springfield Dealers Organize—The motor car dealers in Springfield, Mass., got together last week and formed the Springfield Automobile Dealers' Association, electing the following officers: Dr. M. J. Stoddard, president; R. A. McKee, first vice-president; S. J. Cordner, second vice-president; John Davis, secretary and treasurer. At the next meeting by-laws will be adopted, committees appointed and future work mapped out. The principal object of the organization is to bring about a better system of credits, get business in general on a better basis, promote ness in general on a better basis, and promote motor shows and contests.

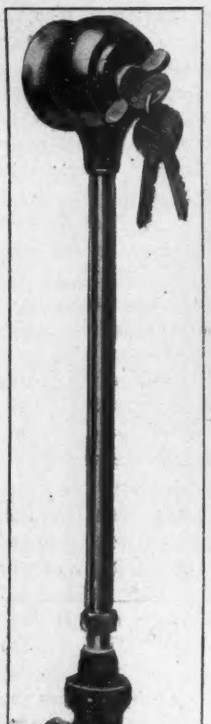
Knox Affairs Promising—The Old Colony Trust Co. of Boston has been selected as a depository for the holdings of the Knox Automobile Co., of Springfield, Mass., and its creditors until the company is eventually reorganized. This will be brought about soon as a harmonious agreement has been reached by the creditors and the assignee. The present orders are enough to carry work along until well into the winter. As an evidence of its belief in the company the Springfield police commission at its meeting a few days ago voted to place a contract with the Knox company for a new motor patrol wagon.

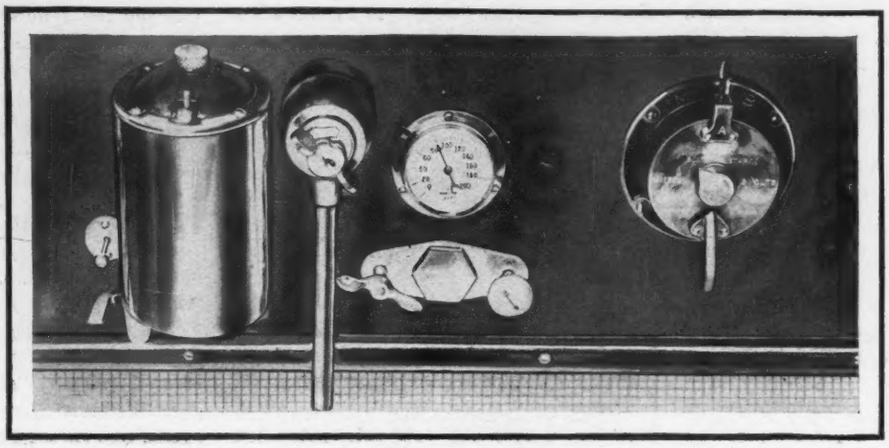
Canadian Company's Report—New profits of $180,127 for the year ending July 31, 1912, are shown in the annual statement of the Russell Motor Car Co., which will be presented at the annual meeting of shareholders on October 31. This is an increase of $2,598 over the previous year and is not so large an increase as was previously expected. After paying dividends on common and preferred stock and deducting underwriting and other expenses connected with the issue of additional preferred stock, a profit and loss balance of $303,133 is carried forward. This compares with $246,068 last year.

DOG CATCHERS' MOTOR WAGON USED IN DETROIT

DOG catchers in Detroit and Pittsburgh now ride luxuriously since the two municipalities have recognized that their work can be accomplished much better through the use of motor cars or trucks. Detroit has just bought a G. M. C. dog catchers' wagon which impounds on an average ninety dogs a day. Fourteen cages of various sizes are provided, each cage being removable and equipped with a water pan for thirsty dogs. The Pittsburgh motor wagon was provided by the Animal Rescue League and is a duplicate of the one in use in Detroit. By having a variety of cages it is possible to segregate the valuable and vicious dogs and also to prevent the animals fighting after they have been captured.

Development Briefs





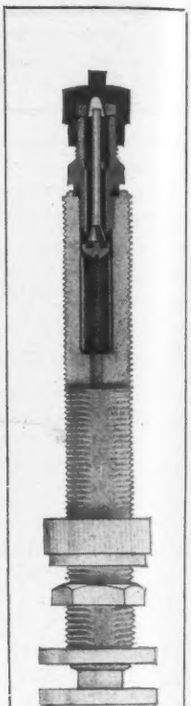


FIG. 1—THE GASOLOCK AND ITS APPLICATION AND THE BURKE TIRE VALVE

Westinghouse Speed Indicator

TO provide a device for the accurate measurement of speed that would be more or less universal in its application, the Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., has introduced the electric speed indicating device shown in Fig. 2. It consists simply of a direct current magneto of special design, furnished by the Holtzer-Cabot Electric Co., of Brookline, Mass., and a direct-current measuring instrument, of Westinghouse manufacture. The magneto generates 25 volts at 1,000 revolutions per minute, and different calibrations may be used, based on this fact, to read in miles per hour, revolutions per minute, cycles per second, etc. One of the most important features of this device is that the meter may be placed at a distance from the magneto, so that several meters may be placed on one board, to register the performance of several machines at various distances.

The Gasolock

Difficulty that has been experienced with some motor car locks is that they either so securely lock the car as to make its movement, in case of a garage fire, impossible, or fail to lock it securely. That the ordinary switch key is an inadequate safeguard against theft is well known, as duplicates are easily obtained, and any clever thief can in a few seconds alter the switch wiring so as to cut it out of the circuit. Among a number of devices which apparently possess none of these inherent faults is the Gasolock, manufactured by the Auto Lock and Specialty Co., Detroit, Mich., which is shown in Fig. 1. It is composed of a valve in the gasoline line, which is opened and closed by means of a shaft and bevel gears which extend upwards within a closed shaft to a head, containing a Yale pin-tumbler lock. The turning of this lock by means of a key opens the valve and permits the gasoline to flow from the tank to the carbureter, after which the key is removed. The valve may be closed, with the key removed, by means of a wing nut, but cannot be again opened until the key is inserted. The shutting off of the gasoline effectually prevents the running of the car, but in no wise prevents it from being pushed about the garage for washing and polishing, nor from being pushed from the building, in case of fire.

Holley Fuel Consumption Indicator

To ascertain the actual fuel consumption, under any certain condition, and without regard to time of running or amount of fuel used, the Holley fuel consumption indicator has been produced by Holley Brothers Co., Detroit, Mich., makers of Holley carbureters. This device, Fig. 4, consists of a gasoline supply vessel provided with a calibrated gauge, and which is of such form that the gasoline consumption may be read direct in miles per gallon. In construction it comprises a frame, adapted to be secured to a lamp bracket, on which is mounted a conical supply vessel, a glass gauge, and a guide float at the top. This float is provided with a float spindle guide, which contains a ball, fixed to the float, so that it shows above the top when the fuel chamber is full. The glass guage tube is contaned in a slotted metal tube, upon which the calibrations are engraved.

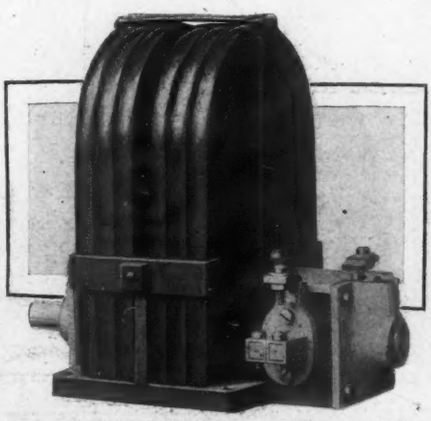


FIG. 2—WESTINGHOUSE SPEED-INDICATING MAGNETO

In use, the car is started and the speed at which the reading is to be taken is attained. Upon the indicating ball disappearing within the float guide, the odometer is set to zero. The car is then run under these conditions for one mile, when it is stopped on the level, and the reading in the glass tube taken. This will be in the form of portions of a gallon, so that it is read as 1-20, 1-25, etc., of a gallon per mile, which may of course be read instantly as 20 or 25 miles per gallon.

Capitol Automatic Auto-Lock

Fulfilling the double function of a gasoline and ignition lock, the Capitol Automatic motor car lock shown in Fig. 4 permits the driver with one motion to cripple two systems of his motor, making their operation impossible, without damaging the connections. The lock consists of a body, containing a Yale pin-tumbler lock, to which the wires from the battery to the magneto or coil are led, which is situated at the top of a vertical column which surmounts a valve in the gasoline line. A lever on the top of the lock body may be thrown from closed to open position, with the key inserted, thereby completing the ignition circuit and opening the supply valve, or breaking the circuit, and closing the valve. With the key removed, this lever may be turned from open to closed position, but when in closed position it cannot be moved until the key is inserted.

The advantages claimed for this lock are that whereas both systems are interrupted, the car cannot be operated on the gasoline contained in the float chamber and supply pipe, beyond the shut-off, because of the absence of a spark, thereby preventing the drying up of the carbureter, which it is said is injurious, and removing the necessity of waiting for the float chamber to fill up again, upon opening the shut-off, to start. It is manufactured by the Esco Auto-Lock Sales Co., Detroit.

Walden Combination Wrench Sets

Using the Walden ratchet wrench as the master tool, a number of socket wrench sets are offered by the Walden Mfg. Co., Worcester, Mass. One of these, Fig. 3, styled No. 6 is a good example of the line. There are but three pieces, the frame and handle, which is one piece of heavy spring wire, the toothed disk, and the wire binding that holds the frame in place. The ratchet teeth are cut in a groove in the circumference of the toothed disk, and the pawl is formed by the loose end of the handle. For direct purchase, a full set of steel sockets affording a range of fifteen sizes, is provided, the shank of each of which fits the socket of the ratchet disk. For angular work at close range a universal joint is furnished, fitted with a square shank and socket to correspond with the wrench and socket shanks, and an extension, with a shank and socket to correspond. The ratchet wrench fits the universal direct, or may be applied to the extension, as the shank extends along the entire length, up to the open end. The wrench is reversible, thus doing away with any catches etc., to stick and rust. Sockets are furnished for cap screws of from 5-16 to 1 inch, for U. S. standard nuts of from ¼ to ¾ inch, for A.L.A.M. standard sizes from $\frac{5}{16}$ to $\frac{7}{8}$ inches, and for bolt heads, $\frac{3}{8}$, ½, $\frac{5}{8}$, and ¾, with each set.

Burke Tire Valve

In valves using springs to close them, in order to force any air into the tire, the pressure of first the tire must be overcome, and then that of the spring, so that about 40 pounds of extra pressure must be exerted before any air may be forced into the tire, in other words, in 100 strokes, about the number required to inflate a motor car tire, 4,000 pounds of energy is wasted in overcoming the pressure of the spring. To eliminate the spring, therefore, and constructing the valve so that its closure is effected by the pressure of air within the tire itself, is to save all of this extra energy, in the opinion of some critics.

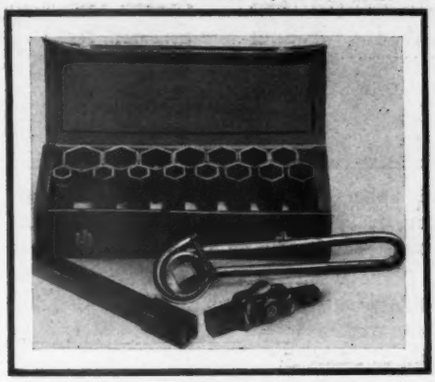


FIG. 3—WALDEN SOCKET WRENCH SET

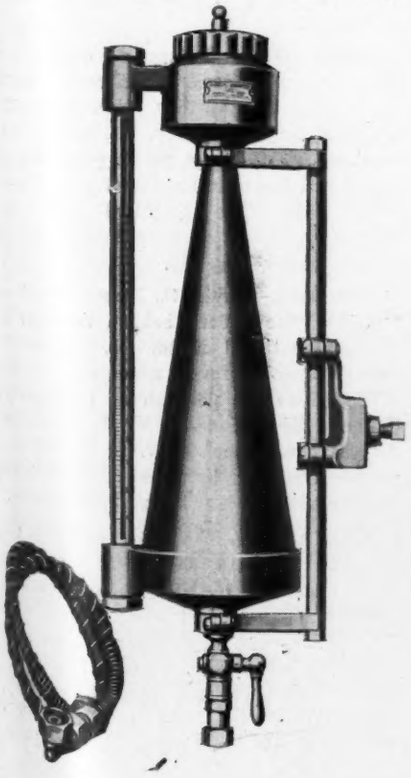
This is the feature that in the opinion of the Burke Valve., Cleveland, O., warrants the manufacture of the Burke tire valve. This valve, Fig. 1, is standard, in as far as being adapted to standard tubes is concerned, and may be obtained as regular equipment with new tires, if specified. If consists of the usual stem, externally threaded for the dust cap, and internally threaded to receive the valve parts. These consist of a stud, the lower end of which constitutes the upper valve member and which retains the plunger of the valve.

This plunger is in the form of a piston provided with air passages, with a reversible rubber valve seat at its upper end. A play is allowed, of about $\frac{1}{16}$ inch, and when raised by the air pressure in the tire, it seats against the sharp edges of the stud, sealing the valve.

Upon the inflation of the tire, an external pressure in excess of the internal pressure, forces the plunger down, and provides a free passage for the air. The stud is screwed into the valve stem over a lead gasket, which is automatically cut, in inserting, by means of a special gasket-cutting feature, in the construction of the stud, consisting of sharp cutting edges on its lower end. This feature permits the user to cut his own gaskets by the simple operation of screwing in the stud.

Safety Gas Garage Heater

Especially designed for garage use, the Scientific Safety Garage Heater, is built on the order of a miner's safety lamp, which renders it proof against gasoline fires. Gasoline may be spilled all over and around it without the slightest danger. It is the product of the Scientific Heater Co., Cleveland, O. It heats by circulating warm air out at the top of the heater, and is said to maintain a uniform temperature at all times irrespective of weather conditions outside the garage. It is asserted that hardly any heat is given off at the sides, so that a car may stand right next to the heater without danger of scorching or blistering, and that it is gas tight. All metal exposed to gases is acid proof. It burns either artificial or natural gas. The construction is of special quality Russia iron finish casing with black enamel trimmings. It occupies no needed room, measuring only 39 inches long, 38 inches high and 10 inches wide.



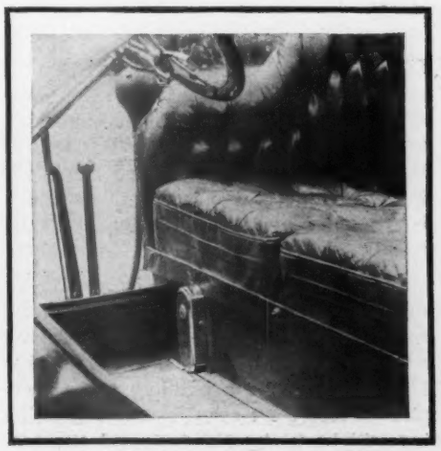
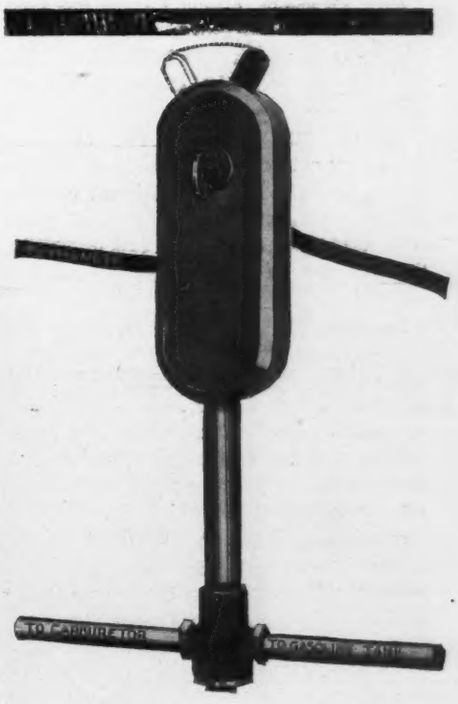


FIG. 4—HOLLEY FUEL CONSUMPTION INDICATOR AND CAPITAL AUTO-LOCK



Brief Business Announcements

Agencies Appointed by Pleasure Car and Truck Manufacturers

Town—	Agent	Car
Asheville, N. C.	Asheville Auto Co.	Alco
Boise, Ida.	Wade & Adelman	Federal
Boston, Mass.	Republic Motor Car Co.	Chevrolet
Boston, Mass.	Republic Motor Car Co.	Little
Buffalo, N. Y.	Barrett Motor Car Co.	Apperson
Butte, Mont.	Packard Motor Car Co.	Packard
Chattanooga, Tenn.	Auto Repair Co.	Alco
Columbus, O.	Oscar Lear Motor Car Co.	Oldsmobile
Columbus, O.	Oscar Lear Motor Car Co.	Oakland
Columbus, O.	Everett Auto Sales Co.	Flanders
Erie, Pa.	Star Garage Co.	Alco
Fond du Lac, Wis.	E. W. Clark Motor Co.	Jackson
Fond du Lac, Wis.	E. W. Clark Motor Co.	Premier
Grand Rapids, Mich.	E. A. Merrill	Alco
Grant's Pass, Ore.	Allen & Dunn	Federal
Greenville, S. C.	W. Conway Thompson	Federal
Harrington, Wash.	J. Thompson & Son	Chalmers
Independence, Ore.	Hanna Brothers	Federal
Kankakee, Ill.	Kankakee Motor Car Co.	Alco
Lowell, Mass.	Walter Perham	Cadillac
Louisville, Ky.	Peter M. Androit & Sons	Atterbury
Madison, Wis.	Hokanson Auto Co.	Chalmers
Memphis, Tenn.	Tri-State Chalmers Co.	Alco
Mendota, Ill.	George Wendel	Rambler
Milwaukee, Wis.	J. G. Wolleager Co.	Studebaker
Milwaukee, Wis.	Hustis Brothers	King
Milwaukee, Wis.	Hustis Brothers	Stevens-Duryea
Milwaukee, Wis.	Hustis Brothers	Borland
Montreal, Que.	Victor Octave Reed	Hupmobile
Morristown, N. J.	A. M. Guerin	Franklin
New Bedford, Mass.	O'Neil Auto Co.	Stearns
New Bedford, Mass.	O'Neil Auto Co.	Hudson
New Bedford, Mass.	O'Neil Auto Co.	Hupmobile
Portland, Ore.	Stoddard-Dayton Automobile Co.	Menominee
Poughkeepsie, N. Y.	R. B. Kelly	Federal
Quebec, Can.	J. A. Landry	Speedwell
Salem, Ore.	B. C. Boedinheimer	Federal
Scranton, Pa.	Simpson & Hubbard	Michigan
Seattle, Wash.	Olympic Motor Car Co.	Rauch & Lang
Seattle, Wash.	Van Brunt Motor Car Co.	Pathfinder
Seattle, Wash.	Pacific Car Co.	Federal
St. Paul, Minn.	Central Auto Co.	Premier
St. Paul, Minn.	Borg & Wharry	Stewart
Union, N. J.	Union Auto Co.	Federal

DETROIT, Mich.—The Stromberg Motor Devices Co. has opened a Detroit branch, with N. H. Minniter in charge.

Detroit, Mich.—The Wolverine Castings Co. of Detroit has been incorporated with a capital of $100,000 to manufacture motor castings.

Cleveland, O.—The Cadillac Automobile Co. has filed papers with the secretary of state changing its name to the Cleveland Cadillac Co.

Detroit, Mich.—J. W. Cully, formerly with the New York branch of the Swinehart Tire and Rubber Co., has been appointed local manager of the Detroit branch.

New York—W. Mason Turner has been engaged as manager of S. J. Wise & Co., Broadway and Fifty-eighth street, New York, agents for the Paige-Detroit and Touraine six.

Chicago—The G. Piel Co., of Long Island City, N. Y., has opened a Chicago branch at 1461 Michigan avenue, with R. G. Ames as manager. Territory extending from Cleveland to Denver, and Minneapolis to Texas, is to be covered from this branch.

Syracuse, N. Y.—M. H. Granger has bought from J. O. Brodeen the Buick agency for Onondaga county, of which Syracuse is the center, and a large part of Oneida county. James Bex, sales manager of the Buick garage, will remain in that capacity and the present quarters at 571 South Clinton street will be retained.

Sheboygan, Wis.—The Wald Mfg. Co., recently incorporated for $30,000, has increased its capacity and added a large number of workmen to its force. The company specializes in the manufacture of a tire tool, pedal grips, luggage carriers and mudguards. Considerable new equipment has been installed and a 4,000-pound stamping press and complete nickel-plating outfit purchased. The company formerly was known as the Wald Co.

Detroit, Mich.—Harry M. Snyder, of the former Snyder-Harbridge Sales Co., has been made secretary of the Reo Motor Car Co., of Lansing.

Detroit, Mich.—C. M. Clement has become production manager of the Metal Products Co., of Detroit, having resigned as factory manager of the Weston-Mott Co.

Lima, O.—A building permit has been issued for the construction of a garage on North Main street by J. A. Ireton, who will occupy it with a garage and repair shop.

Detroit, Mich.—The Rands Mfg. Co., maker of motor car equipment, has purchased from the Pfauder Realty Co., Rochester, N. Y., the plant located at Fort and St. Antoine streets. The plant is about two-thirds the size of the factory now occupied by the company, and will be operated as an addition to the present plant.

St. Louis, Mo.—The Kardell Motor Car Co., of St. Louis, has taken the agency for eastern Missouri and southern Illinois for the Little four and the Little six manufactured by the Little Motor Car Co., of Flint, Mich. This new arrangement will in no way affect the local agency which is controlled by the M. W. Bond Automobile Co.

Indianapolis, Ind.—Mrs. Laura B. Elder has acquired a site at the northeast corner of Vermont street and the Capitol avenue boulevard in Indianapolis, and has let a contract for a building to be occupied by motor car sales rooms. The building will be 95 by 135 feet, and the construction of white enamel brick, trimmed with green brick, the sides facing the streets to be of glass. The building will cost $20,000 and will contain four sales rooms.

Cleveland, O.—The Auto Owners Co., of Cleveland, has filed papers with the secretary of state changing its name to the Sixth City Tire Repair Co.

Columbus, O.—Papers have been filed with the secretary of state increasing the capital stock of the Knight Tire and Rubber Co., Canton, O., from $331,500 to $1,500,000.

Davenport, Ia.—Denial is made by the Davenport Auto Co. that it has made any changes in the management. It will continue to handle the Krit and operate a taxicab line.

Boston, Mass.—Volney J. Jacobs, who has represented various makes of cars in Boston for the past few years, has filed a petition in bankruptcy. His liabilities amount to $19,483, of which $13,572 is secured and there is due about eighty creditors $5,892, the principal one being Walter C. Allen, of New York. Jacobs' assets are given as $50.

New York—David C. Fenner has been appointed New York branch manager of the International Motor Co. Robert E. Fulton, former branch manager, has been promoted to the position of assistant to General Sales Manager W. S. Stevenson. At the same time C. W. Stratford, consulting engineer, becomes chief engineer, vice Edward R. Hewitt, resigned.

Phoenix, Ariz.—The Arizona Motor Co., Inc., has issued a statement denying it has been absorbed by the Transcontinental Motor Co. The story became current when F. A. Carr, who operated a garage here, which he called the Arizona Motor Co., bought the Transcontinental company, consolidating the two interests. The Arizona Motor Co., Inc., is the Studebaker

agent here and has no connection whatsoever with Mr. Carr, it is claimed by its president.

Columbus, O.—W. W. Muzzy is the new manager of the High-Seventh garage, located at High street and Seventh avenue.

Detroit, Mich.—Grosvenor A. House has been appointed sales representative of the Hayes Wheel Co., of Jackson, with an office in the Ford building.

Albany, N. Y.—The E. V. Stratton Co. has opened a repair and service building at 391 Hudson avenue just north of Washington park for the care of Everitt cars and Flanders sixes and electrics.

Milwaukee, Wis.—The Fisk Rubber Co. is building a new branch house and service station adjoining its present quarters at 456 Milwaukee street. The new building will be three stories high, 40 by 120 feet in size.

Cleveland, O.—The Winton Motor Car Co. announces the appointment of Charles D. Smith as production manager. Walter H. Doddridge succeeds Mr. Smith as manager of the company's repair and service departments.

Syracuse, N. Y.—The Overland-Syracuse Co., of which J. W. Lee is manager, is to handle Garford pleasure cars and trucks. T. F. Fitzpatrick, of the Overland-Syracuse garage, is to be the new manager of the truck department.

Boston, Mass.—W. S. Howes, for several years sales manager for the Dodge Motor Vehicle Co. in Boston, formerly agent for the Pope-Hartford line, has accepted a position with the new company that has just taken over the agency.

Columbus, O.—Judge Kinkead in the court of common pleas, has ordered the sale of the property of the Barndt & Johnson Automobile Supply Co., 2030 South High street. Fred W. Herbst has been receiver for the concern for several weeks.

Syracuse, N. Y.—The Jefferson Garage Co. will open its new garage in the Freeman block, 428-432 East Jefferson street, in a few days. Charles J. Roehm will manage the business and will handle the National, Hupmobile and Alco cars and the International truck.

Milwaukee, Wis.—E. B. Huylar has resigned as manager of the Milwaukee branch of the Diamond Rubber Co., 132 Oneida street, and is succeeded by R. W. Smith, who comes from Indianapolis. A. G. Langher is traveling representative in Wisconsin, with headquarters at the Milwaukee branch.

Savannah, Ga.—Jacob Bruno, mechanical engineer, of Hamilton, O., wants Savannah to bid in competition with other cities for a motor car factory. Bruno says that a company is rapidly being organized through his efforts to build cars. The company is searching for a location, preferably in the south, and he has turned to Savannah as the most available location. The suggestion of Bruno has been taken under consideration by the chamber of commerce.

Detroit, Mich.—George S. Waite has been engaged as sales manager of the W. A. Paterson Co., Flint, Mich., manufacturer of the Paterson line of cars.

Sheboygan, Wis.—William Loeffler, for many years foreman of the Jenkins Machine Co., Sheboygan, Wis., has resigned to engage in the garage and repair business at 826 St. Clair avenue.

Chicago—Officials of the Auto Mart of Chicago disclaim any connection whatsoever with the Auto Mart Cut Rate Tire and Supply House recently opened in Milwaukee and which was reported to be a branch of the Chicago concern.

Kansas City, Mo.—The National Motor Car Co. has moved from its temporary quarters at the Shackelford garage, Eleventh and Locust, to its new sales-rooms, 1708 Grand avenue. H. F. Sundin is the manager of this agency.

Kansas City, Mo.—Holcker & Elberg, carriage and body builders, who have recently accepted the agency of Peerless pleasure and commercial cars, are installing a motor car department in their building at Sixteenth and McGee streets.

York, Pa.—Charles E. Sweeney has become advertising manager for the Kline Motor Car Corporation, of York, Pa., and Richmond, Va., succeeding W. P. Sieg, who in the future will devote his entire time to the Kline sales organization.

Buffalo, N. Y.—H. E. Bradford has been appointed superintendent for the Stewart Motor Corporation, of Buffalo, manufacturer of light delivery trucks. Mr. Bradford formerly was connected with the Nordyke & Marmon Co. and prior to that with the National.

St. Louis, Mich.—The citizens of St. Louis have succeeded in raising $25,000 for a new motor car factory, to be conducted under the management of W. H. Kilto & Son, Toledo, O. Work on the factory will be started soon. The company will manufacture six-cylinder trucks and touring cars.

Milwaukee, Wis.—The G. H. Hafemeister Motor Co., of Watertown, Wis., has established a garage and service station at 322-324 East North avenue, Milwaukee, Wis. The company is state agent for the Staver and its principal place of business is at 203-207 Third street, Watertown. W. N. Wegemann, of Watertown, has been appointed manager at Milwaukee.

Anderson, Ind.—P. E. Kempton, of San Francisco, has been made manager of the San Francisco Remy branch, to succeed A. J. Rogers, who becomes manager of the New York branch to succeed F. M. Henkel, resigned. W. F. Hamilton, formerly assistant manager of the Indianapolis branch, becomes assistant manager of the San Francisco branch and is succeeded at Indianapolis by A. H. Berndt, who has been connected with the sales department of the Remy Electric Co., for several months.

Boston, Mass.—Harry S. Morrison, formerly a salesman for the Whitney-Barney Co., of Boston, has just been promoted to be general sales manager of the company.

Pontiac, Mich.—S. H. Humphrey, formerly connected with the Peerless Motor Car Co., has taken the position of factory manager of the Oakland Motor Car Co., to fill the vacancy occasioned by the accidental death of T. W. Wilson on September 15.

Indianapolis, Ind.—A position as special traveling representative, with territory in eastern Indiana, with the A and M Sales and Service Co., Indianapolis, has been taken by J. A. Newby, formerly manager of the United Motor Newcastle Co. at Newcastle, Ind.

Detroit, Mich.—The United Motors Detroit Co. has removed its headquarters temporarily from Woodward and Charlotte avenues to the Brush plant, where service will be provided owners of Maxwell, Columbia, Courier, Brush and Stoddard-Dayton cars.

St. Louis, Mo.—After a slight misunderstanding with another local company, it is announced that the Standard Electrique car is to be handled in St. Louis and its surrounding territory by the Cook Motor Vehicle Co. This company formerly sold the Columbus electric.

Willimantic, Conn.—The Chesboro estate at the corner of Main and Windham streets has been conveyed to Fred D. and William P. Jordan, and they acquire with it the garage business of tne E. P. Chesboro Co. The new owners will make extensive improvements.

Kansas City, Mo.—H. J. Clark and J. H. Runcie have formed the Cole Motor Co. and have taken over the agency of Cole cars for Kansas City, western Missouri and eastern Kansas. They have leased a salesroom at 1712 Grand avenue. Frank Bruening, former distributor of Cole cars, has retired from the motor car industry.

Indianapolis, Ind.—The Goodyear Tire and Rubber Co. has begun the construction of a new business and warehouse building at Walnut street and Capitol avenue in Indianapolis. It will be 50 by 200 feet, of fireproof construction and will cost $107,000. The building is to be occupied by the company as an Indianapolis sales branch as an Indiana distributing branch.

Philadelphia, Pa.—A new company consisting of well-known business men and operating under the name of the Wallace Automobile Co. has taken over the local agency for the Pope-Hartford line of pleasure cars and motor trucks. Headquarters are at 332 North Broad street, in connection with which will be conducted a garage and service department located at 206-210 North Twenty-first street. The officers of the new company are William

M. Brownback, president; H. B. Pearson, vice president, and Robert Wallace, secretary and treasurer.

Toledo, O.—H. L. Croy, formerly mechanical engineer of the Woods Motor Vehicle Co., Chicago, has organized the Toledo Engineering Agency of Toledo, O.

Boston, Mass.—The Pope-Hartford Co. of Boston has just leased a large building on Heywood street, Cambridge, recently completed of steel and concrete, and will use it for a service station.

Haverhill, Mass.—George A. Burnham, James P. Molloy, Charles S. Goodwin and Frank P. Kimball have formed the Rambler Motor Car Co., to handle that make. The company is incorporated for $10,000.

Philadelphia, Pa.—A three-story brick and concrete garage, 74 by 86 feet, is in course of construction for the Pullman Taxicab Co. at 1542 Wood street. The building is to cost approximately $45,000.

Burlington, Wis.—The Raymond C. Agner Co., manufacturing adjustable socket wrenches, grease and oil guns and other specialties, is now located in its new factory, erected at a cost of $30,000. The output has been increased 75 per cent.

Detroit, Mich.—Thomas Walker and Superintendent Weiss of the Weston-Mott Co. and other associates have bought the Flint Axle Works and the firm name will be changed to the Walker-Weiss Axle Works. They will enlarge the facilities of the plant for the manufacture of axles.

Regina, Can.—The Regina Motor Co., has been reappointed representative of the Studebaker Corporation of Canada. Although 6,000 cars were sold in western Canada this year, the demand is not yet supplied, and the Regina Motor Co. has bound itself to sell almost three times the number of cars sold in any previous year. The cars contracted for by this concern are valued at almost half a million dollars.

Columbus, O.—Robert F. Boda & Co., 25 North Fourth street, has contracted to handle the Reo in fifteen counties in central Ohio for 1913.

Columbus, O.—The Eastern Auto Co., 58-62 East Spring street, which has been doing a garage and repair business for some time, announces that it will go out of business. F. F. Cain is general manager.

Columbus, O.—The J. C. Sherwood Rubber Co., which was incorporated recently to handle the United States line of tires in central Ohio, has organized by electing J. C. Sherwood, president and treasurer, and Robert C. Crippen, secretary and manager.

Minneapolis, Minn.—The Havers Motor Car Co., Port Huron, Mich., has closed a contract with A. F. Chase & Co., Minneapolis, Minn., who will handle the Havers line as distributors for a portion of Wisconsin, Minnesota, North Dakota, Montana and a portion of South Dakota.

Vancouver, B. C.—The large number of motor trucks and motor cars operated in Vancouver has induced the Kelly-Springfield Tire Co. of New York to open up a branch office in this city at 929 Pender street, W. Harry R. Sauer has been appointed manager of this branch.

Columbus, O.—Since the consolidation of the Diamond and Goodrich companies the two Columbus branches have been consolidated with the former Diamond branch at 186 East Gay street under the management of H. S. Smith. Part of the office force of the Goodrich branch, which was located at 512 East Long street, has been taken to the Diamond branch. The two lines will be handled separately in the same branch.

Philadelphia, Pa.—The Cartercar Motor Co., now at 632 North Broad street, will during December remove to its new building, 661-669 North Broad street.

Detroit, Mich.—The Ottawa Leather Co., of Grand Haven, Mich., is reported to have leased property in Detroit for the establishing here of a leather manufacturing business for the motor industry.

Philadelphia, Pa.—The Ford Motor Co., 250 North Broad street, has leased property at Sixteenth and Washington avenue and will establish an assembly plant on the site. This property will also give the Ford company the benefit of its own railroad siding. The North Broad street retail salesrooms of the company will after November 1 be located at 257-259 North Broad street.

Indianapolis, Ind.—A contract has been let by the Wabash Realty and Loan Co. for a two-story factory building at Standard avenue and Division street, in Indianapolis, to cost $20,000. The building will be 450 by 50 feet, and when completed will be used as an addition to its already large plant by the Motor Car Mfg. Co. The new building is to be of fire-proof construction.

Milwaukee, Wis.—Frank F. Tuschen, Watertown, Wis., has taken over the garage and business of the Boulevard Motor Co., 264-268 Twenty-seventh street, Milwaukee, and disposed of his business at Watertown to Felix Knospe, of Clyman, Wis., and August Knospe, of Hustisford, Wis., who will continue the garage and business. Mr. Tuschen is state distributor for the Nyberg line.

Recent Incorporations

Akron, O.—Akron Welding Co., capital stock, $10,000; to manufacture and deal in parts; incorporators, M. N. Smith, G. D. Stiver, E. H. Boylan, D. H. Morgan, L. H. Smith.

Albany, N. Y.—Albany Motor Racing Association, capital stock, $1,000; incorporators, J. D. Keeler, R. P. Keeler, S. H. Shaw.

Aurora, Ill.—National Cycle Accessory Co., to manufacture motor car accessories; incorporators, A. J. Jeffery, E. E. Ruth, A. G. Gustafson.

Boston, Mass.—New England Motorist Co., capital stock, $75,000; publishing business; incorporators, F. Hurtubis, Jr., T. T. Bouye, R. E. Croke, W. H. McMahon.

Boston, Mass.—N. E. Motorist Co., capital stock, $75,000; to publish motoring journal; incorporators, F. Hurtubis, Jr., T. T. Bourne, R. E. Croke.

Brookfield Garage Co., capital stock, $10,000; general motor car business; incorporators, R. S. Browniee, F. Dick, A. Gannon, W. L. Yancy, R. W. Markham.

Buffalo, N. Y.—Lafayette Motor Sales Co., capital stock, $10,000; incorporators, J. A. Groh, F. J. Batt, A. E. Groh.

Camden, N. J.—Hendricks Mfg. Co., capital stock, $250,000; to deal in motor car accessories; incorporators, F. R. Hansell, J. A. MacPeak, F. S. German.

Chicago—S. Breastone, Inc., capital stock, $50,000; to manufacture motor vehicles; incorporators, R. Storch, W. H. Davenish, J. Warner.

Chicago—Auto Combination Lock Co., capital stock, $50,000; incorporators, H. L. Mason, H. M. Snow, F. W. Robinson, W. J. Liddy.

Chicago—Barry Taxicab Co., capital stock, $2,500; general motor car business; incorporators, A. A. Rolf, F. A. Tulford, M. Mears.

Chicago—Dean Auto Devices Co., capital stock, $40,000; incorporators, E. R. King, R. Lewis, G. F. Ort.

Cleveland, O.—Perrine Mfg. Co., capital stock, $10,000; to manufacture and deal in motor cars; incorporators, R. A. Wilbur, C. S. Wathner, H. H. Burton, B. A. Gage, A. S. Dole.

Daytona, Fla.—Pneu Tire Filler Co., capital stock, $2,500; incorporator, V. P. Collins.

Detroit, Mich.—Parker Motor Co., to manufacture rotary valve motors.

Detroit, Mich.—Tyro Mfg. Co., capital stock, $5,000; to manufacture and deal in motor vehicles; incorporators, R. I. Wellington, W. C. Stuart, F. J. B. Gerald.

Hartford, Conn.—Locomobile Co. of Missouri, capital stock, $10,000; incorporators, L. A. M. Marsh, D. S. Day, S. Stoddard.

Jacksonville, Fla.—Atkinson Tire & Supply Co., incorporators, R. L. Atkinson, J. D. Cary, L. H. Boggs.

Louisville, Ky.—Rohmel Motor Car Co., capital stock, $15,000.

Madison, N. J.—Michigan Motor Sales Co., capital stock, $10,000; to deal in motor vehicles; incorporators, E. L. Reynolds, A. L. Reynolds, C. Reynolds.

Menominee, Mich.—D. F. Poyer Co., capital stock, $75,000; to manufacture motor trucks.

Mount Vernon, N. Y.—Mount Vernon Local Auto Express Co., capital stock, $1,500; incorporators, L. Jacobsen, F. Cardillo.

New Orleans, La.—Exeride Fuller Co., capital stock, $1,000,000; to manufacture filler for tires.

Newark, N. J.—Lippard Stewart Sales Co., capital stock, $50,000; to deal in motor cars; incorporators, B. P. Burton, R. C. Bennett.

Newark, N. J.—W. C. D. Motor Car Co., capital stock, $50,000; general motor car business; incorporators, P. C. Wells, W. E. Camping, Wm. J. Drumpelmann.

New York—Cathedral Park Garage, Inc., capital stock, $1,000; incorporators, M. Klein, K. Klein, S. Klein.

Petrolia, Ont.—Petrolia Motor Car Co., capital stock, $300,000; directors, W. English, C. H. Metcalf, J. A. McKenzie and others.

Philadelphia, Pa.—McGraw Tire & Rubber Co., capital stock, $100,000.

Portland, Me.—Maine Power Truck Co., capital stock, $10,000; directors, I. L. Peabody, G. E. Peabody, H. E. Nixon.

Salem, Ore.—Beaver State Motor Co., capital stock, $300,000; to manufacture motor vehicles; incorporators, P. A. Combs, J. L. Bailey, G. A. Johnson.

Sheboygan, Wis.—Wald Mfg. Co., capital stock, $30,000; to manufacture tire repair tools.

Toledo, O.—Valley Light & Power Co., capital stock, $200,000.

Troy, N. Y.—Auto Salvage Corp., capital stock, $2,000; to deal in second-hand motor cars; incorporators, M. Kennedy, T. F. Low, M. F. Nichols.

University City, Mo.—St. Louis Tire & Rubber Co., capital stock, $150,000; to manufacture rubber goods; incorporators, J. A. Swinehart, H. C. Baker, A. C. Einstein, W. H. Glasgowk, R. F. Britton, C. C. Collins, C. M. Skinner.

Washington, D. C.—Croton Motor Car Co., capital stock, $300,000; incorporators, J. P. Stoltz, A. M. Linn, J. D. Bigger, J. I. Brownson, J. H. Donnan, H. C. Warne, C. S. Caldwell.

Williamson, Me.—Goodyear Tire & Rubber Co. of South America, capital stock, $3,000,000; directors, E. M. Leavitt, J. Williamson.

Wilmington, Del.—Dayton Motor Truck Co., capital stock, $100,000; to manufacture and deal in motor vehicles; incorporators, E. E. McWhiney, N. P. Coffin, H. E. Latter.